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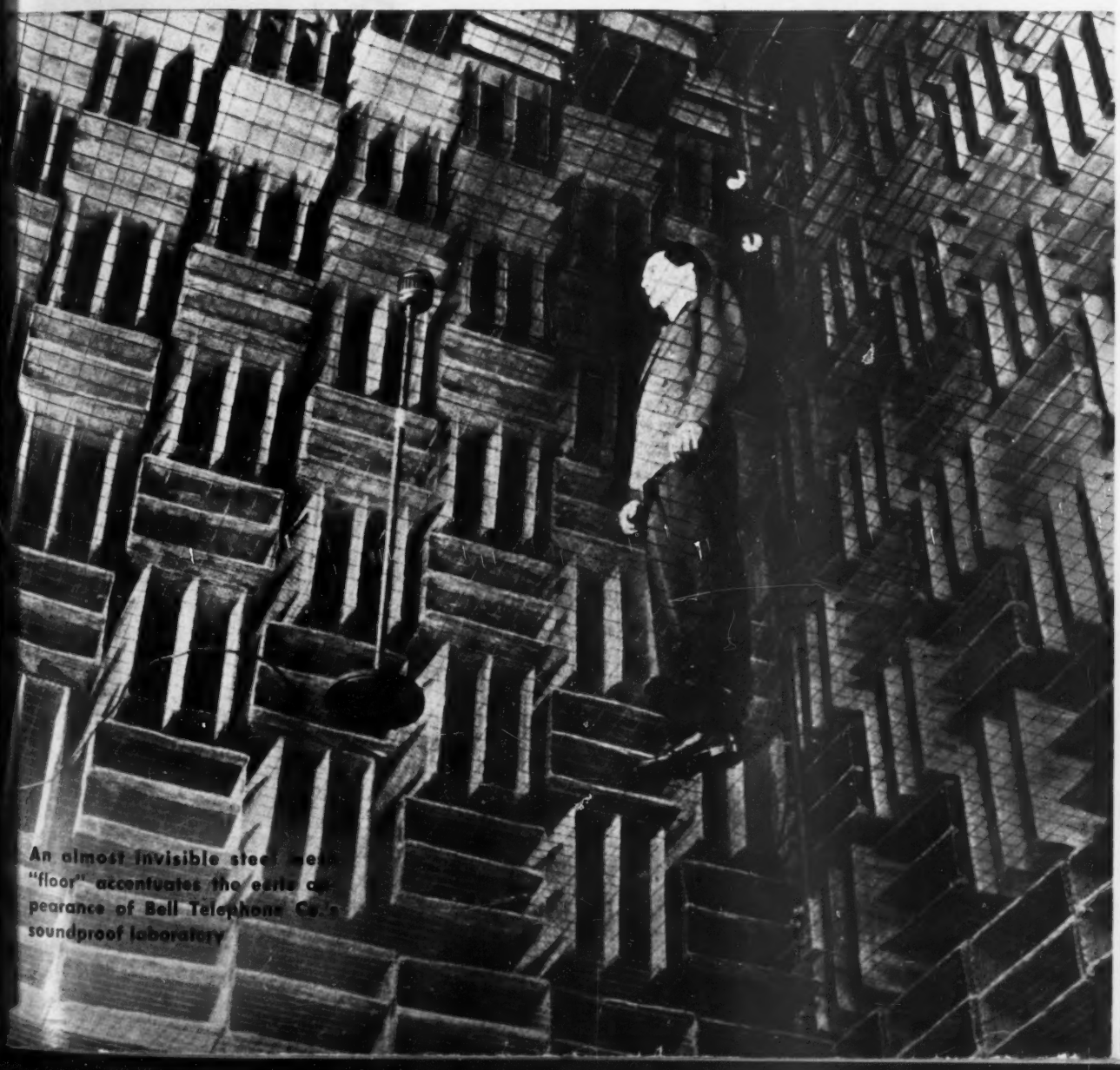
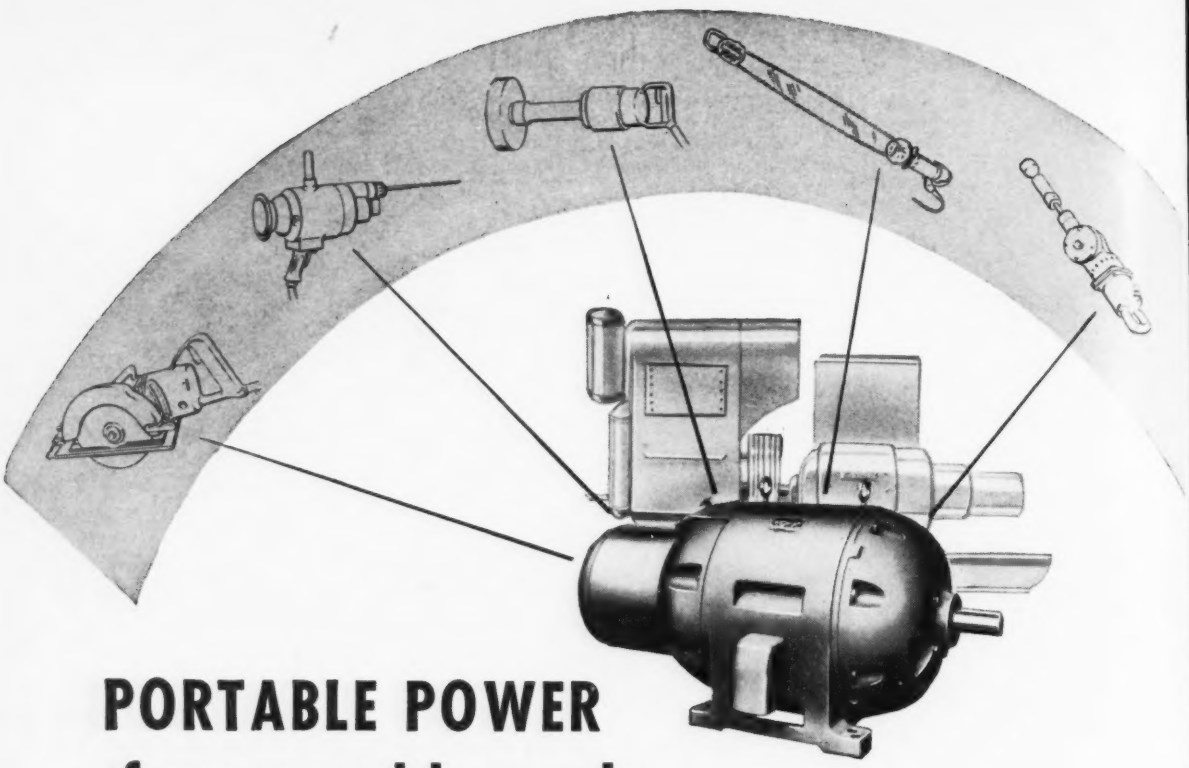


An almost invisible steel ... "floor" accentuates the eerie ... pearance of Bell Telephone Co.'s soundproof laboratory



PORTABLE POWER for portable tools

Gas- or Diesel-driven Generators Work Long Hours in any Location with Minimum Maintenance

Muscle-saving, time-conserving power tools are multiplying like rabbits these days. Why? Because they increase labor's productivity, speed construction and raise profit margins.

To keep these tools sawing, grinding, drilling, tamping and sanding you'll need reliable, low-cost power such as derived from General Electric gas- or diesel-driven generators. The generating unit should be lightweight and easily portable so as not to limit the portability of the tools. Automatic regulating characteristics of G-E generators allow you to work right up to the load limit without watching instruments or risking damage to the generator. Many years of research and experience go into each piece of General Electric equipment you buy.

For these reasons we believe you will profit by specifying G-E on your next portable power plant. Make use of all the portable tools available which fit your operation, and be sure the heart of your power system bears the General Electric name. *Apparatus Department, General Electric Co., Schenectady 5, N. Y.*

ELECTRIFIED CONSTRUCTION
BETTER PRODUCT
LOWER COST

GENERAL ELECTRIC

News of the Week

ENGINEERING NEWS-RECORD • JANUARY 1, 1948 • VOLUME 140 • NUMBER 1

Construction dollar-volume reaches all-time record

***Engineering News-Record* sets total for 1947 at $12 billion for new high—New records established for highways, commercial buildings, sewage works**

The U. S. construction industry on Dec. 31 completed the biggest construction year in history from a dollar-volume standpoint.

Estimated total value of all construction during the year—including heavy engineering work, housing and other factors—was more than $12,000,000,000, year-end totals compiled by *Engineering News-Record* show. According to this journal's figures this total exceeds even the war years, and is approached only by figures for 1942, when $11,521,000,000 was recorded.

A sobering factor, however, was the report that the physical volume of construction was actually less than in 1946, despite an upsurge reported during the last four months of the year.

Of the dollar total for 1947, heavy engineering construction accounted for $5,659,000,000, which was an all-time record for any peacetime year. Only twice in the history of the *ENR* recorded volume totals has the 1947 heavy engineering total been exceeded—in 1941, when $5,869,000,000 was reported, and in 1942, when the figures showed $8,006,000,000.

Costs continue upward

Despite efforts of the industry itself and pleas by government and other agencies, heavy construction costs continued to climb during the year, with only an almost imperceptible slackening of the rate of rise. The cost index showed a 17 percent jump over 1946. And in 1946 (*ENR* Jan. 2, 1947, vol. p. 1) the rise was 18 percent over 1945.

Statisticians of the *ENR* Business News Department commented that the cost trend reflects continuing rises in prices along the entire line of production of building materials, as well as increases in wages to labor, increases in local taxes, and continued shortages of some materials. They said, however, that labor productivity has shown some indications of improving, judging by trends reflected in contractors' costs indexes.

Records established

On the dollar-volume basis several all-time high records were established, notably in commercial buildings (including mass housing) where the total for the year topped $1,898,000,000 for a gain of $22,000,000 over 1946. The figure reflects the near-boom in private housing which produced more than 825,000 dwelling units in 1947.

Highway construction established a new all-time mark with a $794,000,000 volume, compared to $769,000,000 in 1946. Other large gains were recorded in sewage works, where a total of $175,000,000 was a new record, and bridges, where $196,000,000 made an all-time mark.

Public construction, with a $615,000,000 volume, topped 1946 figures, but reached only third highest in comparison with other years.

Earthwork, drainage and irrigation projects showed total of $327,000,000 of work; and private industrial construction arunner-up for the record at $862,000,000 was second to the record $1,113,000,000 in 1916.

Predict $13.5 billion 1948 building

Construction volume in 1948 should reach $13,500,000,000, outdistancing any single construction year on record, *Engineering News-Record* statisticians said last week.

Of the total, $6,365,000,000 should be accounted for by heavy engineering construction—a 15 percent jump over 1947 which is itself a record year; and the remainder should be credited to other types of construction.

A year ago (*ENR* Jan. 2, 1947, vol. p. 1) this journal predicted the 1947 overall total would be $12,000,000,000—which proved to be an almost exact estimate.

Lightening the picture of a sharp decline in physical volume in 1947, despite an all-time high dollar-volume, statisticians said they expected physical volume in 1948 would increase about 13½ percent over 1947.

The prediction was based on a continuing trend of increasing dollar-volume gain that has held steadily at about nine percent over each preceding year, and bolstered particularly by figures for the last quarter of 1947, when the volume index jumped 20 percent over the comparable period of the previous year.

The Business News Department said it saw a possibility that construction costs might rise another 10 percent in the coming year, but warned that any sharper rise might prove dangerous to the industry as a whole.

At present—in terms of 1947 dollars—the *ENR* staff has recorded a backlog of more than $45,000,000,000 of heavy construction projects of all types, many of which are ready for work.

Other predictions

Other sources of information on construction economics were even more optimistic on prospects for the coming year, although their predictions were notably under their forecasts for 1947.

The U. S. Departments of Commerce and Labor, in a joint prediction, foresaw 1948 volume at $15,200,000,000.

The Producers' Council forecast $14,000,000,000.

The U. S. Federal Works agency, in a statement by J. W. Follin, assistant administrator, placed the 1948 total at $13,700,000,000.

The Commerce-Labor estimate said heaviest emphasis would be on private residential construction, which it predicted would top $6,000,000,000 for the year, and said private utility construction programs would account for about $1,625,000,000 for the new year.

NEWS IN BRIEF

In telegraphic form, here are latest news developments on the engineering and construction front during the week.

Public construction — *Tallahassee, Fla.*, is asking bids on a new 150-bed municipal hospital to cost $1,500,000. . . . An agreement among the state, city and New Haven R. R. will bring nearer the construction of the proposed $1,-500,000 pier at *Fall River, Mass.* . . . *Atlanta, Ga.*, will receive bids this month on a $600,000 exhibit annex to its municipal auditorium. . . . With completion of the $550,000 central farmers' market at *Jackson, Miss.*, scheduled for next spring, the market board will ask the legislature for another $500,000 for additions. . . . Preliminary plans are under way for a $3,000,000 manual training high school at *Indianapolis, Ind.*

Industrial construction — American Sugar Refining Co. has acquired 495,-000 sq.ft. of waterfront property near *Boston, Mass.*, and eventually will build a refinery to cost $18,000,000. . . . At *Seattle, Wash.*, the State Liquor Control Board is receiving bids for a $1,250,000 terminal warehouse. . . . Construction will start soon on a $4,000,000 rayon plant for Deering-Milliken at *Anderson, S. C.* . . . Contracts have been let for a $1,500,000 addition to the Halifax Paper Co's plant at *Roanoke Rapids, N. C.* . . . Davison-Paxon Co., *Atlanta, Ga.*, department store has plans for a $4,000,000 building expansion. . . . The Canadian Johns-Manville Co. is building a $2,500,000 plant at *Port Union, Ont.* . . . Dunlop Tire and Rubber Co., Ltd., of Toronto, early in 1948 will start building its new $1,500,000 plant at *Whitby, Ont.* . . . A 5-story Bonwit Teller store will be built on South Main Street, *Houston, Tex.* . . . Witco Hydrocarbon Corp. will begin soon the construction of a $3,500,000 gasoline and carbon black plant in *Reagan County, Tex.* . . . Hudson Engineering Co., Houston, Tex., has a contract for a $3,000,000 gasoline plant for the California Co., the Texas Co. and the Stanolind Oil & Gas Co. in the *Rangley, Colo.*, field. . . .Construction has started on a $1,000,000 detached-unit hotel development, to be known as "Town House", at *Houston, Tex.* . . . The Consumer Cooperative Association has signed contracts for the installation of a $1,500,000 dewaxing plant at an oil refinery at *Coffeyville, Kan.*

Plan Louisiana Bridge—Architect's drawing gives appearance of a new high-level bridge to be built across the Calcasieu River at Lake Charles, La. (ENR Nov. 20, vol.p. 699). The bridge will be of steel viaduct type, with the main river spans consisting of through-cantilever sections and one suspended span. The structure will be 6,500 ft. long and support a four-lane highway. Vertical clearance of 135 ft. above water level will be provided.

Housing—Contract has been awarded to J. A. Jones Construction Co., Charlotte, N. C., for the $2,000,000 Valley View apartments at *Birmingham, Ala.* . . . Archer Homes, Inc., will build a $25,000,000 project at *Houston, Tex.*, and in the same city a $2,000,000 concrete block apartment building will be built near the university. . . . A $6,500,-000 housing development on Mercer Island, near *Seattle, Wash.*, is planned for 1948 by Charles F. Clive & Associates. . . . Planned to start May 1, construction of a $1,000,000 rental housing project, the first unit of a huge middle-class family development at Allisonville Road and 52nd St., in *Indianapolis, Ind.*, has been announced by Bradford Homes, Inc., Evansville. . . . A large project is under way at *Miami, Fla.*, involving eventual expenditure of $4,583,000 to provide 512 apartment units. . . . A 280-unit project costing $3,000,000 is announced by Peachtree Garden apartments, *Atlanta, Ga.* . . . In the Riverdale section of the *Bronx, New York City*, a group of four 12-story apartment buildings to accommodate 600 veterans and their families on a tenant-ownership basis is planned by the Basic Builders Corp. N. Y. Life Insurance Co. has plans for a 19-story apartment building for 600 families and an adjacent garage for over 1400 automobiles on the east side of Third Avenue, Manhattan.

Highways—N. C. State Highway and Public Works Commission is planning construction of the *West Asheville* bridge over the French Broad River at a cost of approximately $1,500,000. . . . Frank Miller, engineer-architect is making plans for a $1,000,000 railroad crossing at West Trade Street, *Charlotte, N. C.* . . . Garrett L. Withers has been appointed state highway commissioner of Kentucky to suceed J. Stephen Watkins.

THE COVER PICTURE

In a strange room recently built at the Bell Telephone Company laboratories at Murray Hill, N. J., a technician stands on an almost invisible wire-mesh "floor" in a completely soundproof room.

Built for acoustical research, the room is 28 ft. high, 28 ft. wide and 35 ft. long, and its walls, ceilings and floor are lined to a depth of five feet with wedges of glass fiber acoustical material, bonded together with bakelite phenolic resins.

The room is said to eliminate 99.98 per cent of extraneous sound.

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Atomic energy group reveals program for $460 million construction work

Commission says program already well under way and is due to reach peak early in 1949—Housing, plant additions planned

The U. S. Atomic Energy Commission last week revealed that it plans to spend about $460,000,000 on construction in the next five years, to expand its facilities. The expenditures will be a part of a $1,100,000,000 program of investment to cover new construction and new equipment for commission activities.

Although few details of the type of plant construction planned have been disclosed, it is known that a good portion of the construction money will go toward housing and community facilities, roads, streets and the like, in the commission-operated "company towns" at Oak Ridge, Tenn., Hanford, Wash., and other places. Of the money to be spent on plant expansion, about $200,000,000 will be for buildings, and $472,000,000 for equipment.

Housing gets priority

Because of the location of the atomic-energy plants, temporary accommodations were built for workers and technicians when the plants were put into operation during the war. Replacement of these facilities, and the placing of the communities themselves on a normal community-life basis are the objectives of the new program.

During the 1948 fiscal year—which began July 1, 1947—a total of $106,000,000 will be spent for housing and community facilities. Plans have now been completed for construction of 1,000 individual houses and 500 apartments at Oak Ridge; and 450 factory-cut homes and 1,000 additional housing units are planned for Hanford. The Oak Ridge projects—still in the design stage—are in the hands of Skidmore, Owings and Merrill, New York, as architect-engineers; and contracts for much of the Hanford work have been awarded to Atkinson and Jones, and J. L. Hudson.

At the Los Alamos, N. M., installation, the commission contemplates building 550 individual homes, plus 113 apartment-type units, for which the W. C. McKee Co., Los Angeles, Calif., holds a contract.

Most of the production-plant work is scheduled for Oak Ridge and Hanford, but research work will be scattered around the country, extending from the Brookhaven project on the site of old Camp Upton, Long Island, to Berkeley, Calif.

To carry out this huge program by decentralized methods, AEC recently set up machinery for regional offices to handle almost all contracts. Roger Warner, formerly with the U. S. Office of Scientific Research and Development, has been named director of engineering, to head an organization comprising some 25 key engineers and construction men.

Under Warner, the organization will be split into two branches, to deal with development and actual construction. Heads of the two branches have yet to be named, but six key assistants have already been appointed. These are: Arthur E. Gorman, formerly of the Housing Expediters Office; George Kackley, recently of the Department of the Interior; George Christianson, formerly an engineer for the Army Corps of Engineers; Joseph Hayner, formerly with the Manhattan District; Comdr. Gardner Luce (CEC, USN ret.), and Donald Abbott, a civil engineer formerly with the Geo. A. Fuller Co. and Abbott and Merkt Co.

These men will act as the staff for overall planning work, although almost all the detailed planning will be done by private architects and engineering organizations. Field offices to handle such contracts will be established in New York, Chicago, Hanford, Santa Fe and Oak Ridge. When possible, competitive bids will be asked, but occasionally, where the nature of the work warrants, only negotiated contracts will be used.

W. E. Kelley will head the New York office; A. Tammaro the Chicago office; Carlton Shugg, Hanford; Carroll Tyler, Santa Fe, and J. C. Franklin, Oak Ridge. Most of these men are engineers who have wide experience in general construction work.

Begin $50 million Alexandria power plant

Work started recently on the $50,000,000 Braddock Light & Power plant in Alexandria, Va., on the Potomac riverfront just north of the Washington & Old Dominion Railroad. The first of five 80,000 kw. turbine generators is expected to be in operation next summer, the second a year later.

The ultimate capacity of 400,000 kw will be more than twice that of the Bennings plants, which is now 185,000 kw. To house the generators and boilers which tower 112 ft., plans call for a 120-ft. high building with 270-ft. stacks. Alexandria changed its regulation concerning height of buildings so that the plant could be constructed.

BLS sees 2.1 million construction employment

Coupling its prediction to its $15,200,000,000 forecast for overall construction in 1948 (see first page) the Bureau of Labor Statistics of the Department of Commerce said last week that construction employment would top 2,150,000 workers by next September.

This figure would be 250,000 greater than that of September, 1947, which was $1,900,000.

BLS statisticians said that they expected private industry to start some 950,000 dwelling units in 1948 (which would be an all-time high), while 20,000 publicly-financed units will also be built. Roughly a third of all construction workers will be employed on this work, the agency added. These will include some 425,000 carpenters; 100,000 bricklayers, over 80,000 painters and glaziers, 55,000 plumbers and steamfitters, and 52,000 plasterers.

At the peak period of 1947, 390,000 carpenters, 90,000 bricklayers, 75,000 painters and glaziers and 47,000 plasterers were employed.

Canada marks biggest construction year

Two reliable indicators on the Canadian construction industry last week showed that 1947 was the biggest construction year in Canadian history.

In its monthly commercial letter, the Canadian Bank of Commerce said that construction in progress or contracted for during the year was the largest amount so spent or committed in the country's history. The bank said that the contracts total more than $1,000,000,000—of which $634,000,000 is in new contracts, and the remainder carryover from 1946. Most of the gain was credited to heavy engineering work—roads, bridges, wharves, sewers, waterworks and the like—which were up 40 percent over 1946.

The annual MacLean Building Reports indicated that construction contracts awarded in the first 11 months of 1947 were up nearly $20,000,000 over those for the previous year, and its experts expected the total of contracts awarded to top $700,000,000 for the full twelve-month period.

DEVELOPMENTS BEYOND U. S. BORDERS

Digested from reports by Engineering News-Record correspondents and the McGraw-Hill World News Bureau

Australia completes its highest earth dam—Report extensive commercial developments abroad—France builds new wind tunnel

Australia—Stirling Dam, Australia's highest earth dam, has been completed in western Australia, according to government sources.

Part of a long-range plan to develop the potentially fertile but drought-stricken area south of the city of Perth, the dam straddles the River Harvey about 11 mi. east of the town of the same name. Work on the structure was started in 1939, but suspended during the war.

The dam crest is 158 ft. above the stream bed, and has a length of 930 ft., and, since its mass contains about 727,000 cu. yd. of material, the structure is the biggest and highest earth structure in Australia. It backs up a lake of over 1,000 acres, with a capacity of some 12 billion gal. of water.

This structure was built around a clay plug with a concrete cutoff wall extending to bedrock.

William C. Williams, Under-Secretary for Water Supply of the Western Australia Public Works Department, said that the dam spillway is designed for the discharge of 10,000 cu. ft. per second and is a semi-circular weir, with a crest height of 250 ft.

France—A 186-ft. high thin-shell dam is now under construction at Couesque, in France's central Massif region. The structure is being built without a spillway, and high water will be permitted to pour over the dam's crest.

The crest is fitted with a lip of constant cross section, with fins provided to eliminate any possible vibration from the overflow wave.

Started in August, 1945, the dam is not yet completed, but scale model tests have indicated the practicability of its overflow system.

India—Disputes over spillway design for the Tungabhadra River Dam, now under construction by Hyderabad State and Madras Province, have been settled, and construction is again under way. The spillway will take up the central 2,300 ft. of the 8,200-ft. structure, with its crest 130 ft. above the stream bed, and will be built of reinforced concrete.

British Combine photo

***Expand Australian Port**—Strung out along the banks of the narrow River Yarra, the Port of Melbourne—second largest in Australia—is now undergoing a $20,000,000 expansion and rehabilitation program. In addition to the general improvements planned, the city's Port Authority has started preliminary work on a new dock construction program that will add about a mile of new wharfage space to the port. In the foreground above are the Victoria Docks, outstanding features of the harbor.*

More than 5,000 laborers are now at work on the structure, aided by one bulldozer, four air compressors and a few tripod and wagon drills.

Industrial Developments...

A series of announcements during the last week emphasized increasing participation of U. S. business organizations in foreign construction.

The Todd Shipyards Corp. announced that it had completed a 2-year expansion program at the Union Industrial Shipyard at Barranquilla, Colombia. The company took over management of the property two years ago, at a time when the plant could handle only a limited amount of repairs on shallow-draft vessels plying the Magdalena River. It is now equipped for the construction and repair of river tow boats and barges and for almost any type of machine and steel fabrication work.

The Sperry Gyroscope Co. Ltd., announced it had nearly completed extensions to its factory at Brantford, Middlesex, England, to add 20,000 sq. ft. of floor space for a new research laboratory.

Koppers Co., Inc. of Pittsburgh, Pa., and the Compania de Acero del Pacifico of Chile (Pacific Steel Co.) announced the signing of a basic contract by which Koppers will have supervision of construction, engineering, and management of an integrated steel plant to be built at Concepcion, Chile, at a cost in excess of $50,000,000.

In India, increasing demands from the construction industry, coupled with a sharp drop in production have driven the black market price of cement to about $90 a ton—nearly five times the controlled price, observers said. Rated capacity of the factories of India and Pakistan is roughly 2,700,000 long tons, but in 1946 total production was only 1,542,000 tons, and this year's output is expected to be somewhat less.

Wind Tunnels....

France—One of the world's largest wind tunnels for aeronautical research is now being installed at Avrieux in the French Alps.

The tunnel will be powered by two 55,000 hp. Pelton turbines, utilizing a 864-meter waterfall. Two 15-meter diameter fans, moving at 250 rpm., will

For Cleanliness —Engineers and public works officials who comprise the executive committee of the International Conference on Public Cleansing, pose at Amsterdam, Holland, after attending a 15-nation conference. Left to right, first row, are: A. Janssens, Antwerp, Belgium; R. B. Brooks, St. Louis, Mo., U. S. A.; A. Bossard, Lucerne, Switzerland; J. W. Partridge, Paris, France; Ake Bjorkman, Stockholm, Sweden. Rear, J. C. Dawes, London, England; A. M. Noppen, organization president, Amsterdam, Holland, and H. Arden of Westminster, England.

move air at the speed of sound through the tunnel. The tunnel itself will be built of welded steel tubing, and will be rectangular in shape with a total length of 390 meters.

The tunnel was originally planned and partly installed by the German air force at Oetztal, in Austria. The French moved all the parts they could find to the present site, and expect to finish construction early in 1949.

Transport . . . .

Mexico—Mexico's three major trunk highways — those under construction from Mexico City to Ciudad Juarez, opposite El Paso, Tex., and the sections of the Mexican branch of the Pan American Highway from Nogales to Guadalajara and Mexico City to the Guatemalan border—will be advanced to close to completion in 1948, according to government sources. Agustin Garcia Lopez, Secretary of Communications and Public Works, said that several sections of the three roads are already in service, but considerable gaps still exists.

Argentina—The federal government has authorized the expenditure of $2,500,000 to construct a road from the city of Corrientes to Goya (both in Corrientes province) and $20,000,000 for other road projects in that part of the country.

England—A sign of an approach to prewar normalcy was seen recently in an announcement by the Ministry of Transport that it would begin a new drive to make pedestrian crossings more generally observed and used.

The Ministry noted that since the war—when the blackout made pedestrian crossings useless at night—"there has been a tendency for pedestrians and drivers to disregard the crossings. This has resulted in a return to the old practice of "dodging the traffic" an increase in accidents.

The new campaign will be mainly educational, and one of the first steps will be the replacement of beacons and studs damaged or removed during the war.

Ports and Harbors . . . .

Argentina—The first of four floating drydocks, each with a 750-ton lifting capacity and with a gross tonnage of 2,000 tons, has been delivered by the British firm of Engineering and Exports, Ltd., to the Argentine Navy.

India—The city of Madras, in southern India, plans to spend $13,500,000 during the next ten years to increase the capacity of its port facilities by more than a million long tons of cargo yearly.

Present port capacity is 1,500,000 tons. Work will center on the south side of the harbor, where a dock capable of berthing four 600-ft. ships is to be built.

Miscellany . . . .

England—A new telephone cable recently put down between England and Holland was formally opened recently. With a total length of 82 nautical miles, the cable is of coaxial type, the first of this type to be laid anywhere for commercial use.

The actual laying of the undersea length of the cable, between Aldeburgh, Suffolk, and Domburg on the Island of Walcheren, was accomplished in a single run in just under three full days, by the British Post Office cable ship *Monarch*.

Controversy continues on Agate Pass bridge

Continuing its fight to be allowed to construct a toll bridge across Agate Pass between Bainbridge Island and the Kitsap Peninsula northeast of Seattle, Wash., (*ENR* Dec. 4, vol. p. 770) the Puget Sound Navigation Co. has offered to sell the bridge to the state at any time after construction begins.

The Washington State Toll Bridge Authority, after the company first announced plans for the bridge, declared that no bridge could be built without its approval and such approval would not be granted the ferry company. The state highway department is preparing plans for an Agate Pass bridge but apparently is moving too slowly to satisfy the company.

"We are interested in the bridge from a money-saving, not a money-making standpoint," said Capt. Alexander M. Peabody, president of the ferry firm. He explained the line has eight ferry routes serving Kitsap County, and as many as four of these routes could be eliminated following construction of the bridge. The ferry company has been unable to get state approval for the higher fares it deems necessary for profitable operation and feels the only alternative is to consolidate its routes.

Sanderson & Porter, New York engineering firm, has conducted a study of the traffic potential. According to this study even the least favorable set-up would provide an estimated gross revenue of $134,000 over a five-year period and a net operating profit after taxes of $54,000. The most favorable proposition would produce revenues over the 5 year period totaling $316,000.

Random Lines *from an editor's notebook . . .*

. . . . . In which a staff editor makes a progress report on the Allegheny County (Pa.) Sanitary Authority

Plans for pollution abatement in Allegheny County, Pa. are being crystallized as the first phase of the Allegheny County Sanitary Authority's program of sewage collection and treatment nears completion. This part of the program included field investigations and preliminary cost estimates forming a comprehensive report on a county-wide, metropolitan plan for sewage disposal. The report is expected to be completed early in January, 1948.

To date, 99 of the county's 128 municipalities (cities, boroughs and townships) and two in Westmoreland County have contracted with the authority to prepare the report. Only six of the county's municipalities subject to the state's clean-up order (*ENR* Jan. 16, 1947, Vol. p. 90) have failed to join the authority. In addition, the authority is making individual reports to 30 private industrial concerns, at a nominal charge, on the costs and requirements of treating their industrial wastes under the metropolitan plan.

Design phase next

The second phase of this $75,000,000 program will be to prepare design plans and specifications; the third to award contracts for construction of collector systems and treating plants.

Decision to consider pollution abatement at the metropolitan level only, rather than on individual studies of communities' needs, was based in part on the many intertwined boroughs within the county. Then, too, such a plan was deemed more economical and one capable of being prosecuted to a more satisfactory conclusion.

Under the terms by which it was created, in 1946, the authority is empowered to prepare its comprehensive report, but it cannot proceed with plans and specifications until authorized to do so by the municipalities. Upon completion of the report each community affected by it will have to decide whether to join in the metropolitan plan or build its own collector system and sewage treatment plant.

The authority is authorized to sell revenue bonds—to be retired by sewer rentals—for the preparation of plans and for construction of treatment facilities. Allegheny County, itself, is not empowered to sell such bonds.

Following decision of the municipalities to adopt the metropolitan plan for pollution abatement, the authority will negotiate contracts with the individual communities and proceed with plans and specifications, the preparation of which is estimated to take about three years. Forty-year revenue bonds will be sold to cover construction.

Since only the communities affected have the authority to collect sewer rentals before service is available, financing of the plans and specifications can be done by one of two methods. Each community can allocate its share of the cost either out of its current operating budget or by the sale of bonds, or it can collect the necessary rentals on sewers already in place.

Construction contracts slow

Obviously, it will be impractical to award construction contracts for each unit of the program as soon as those plans are completed since it would be difficult to sell the necessary revenue bonds based on such an indefinite and long-term operation. The method most favored at present is to prepare the major portion of the plans and specifications before selling the bonds to cover the cost of construction.

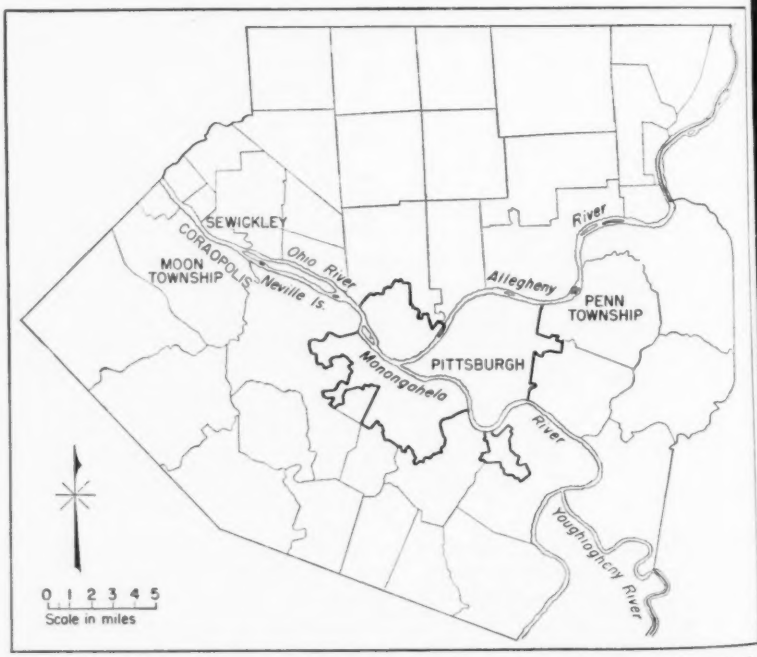
As to the final plan for pollution abatement throughout Allegheny County, no decision has been made at present whether it will have only one central sewage-treatment plant, or a limited number of district plants. In either event, the plan finally adopted will be on a comprehensive basis for the entire year.

Certain municipalities, such as Coraopolis, Wilkinsburg, Whitaker and Penn Township, which plan on building their own treatment plants, are not expected to join the county-wide plan. Moreover, the authority does not contemplate preparing plans and specifications for any industrial firms or communities not joining the metropolitan plan. Such industrial firms or communities will need to make their own arrangements.

Preliminary studies of the plan based on a central treating plant are practically completed, and studies on the second plan involving a limited number of district plants are nearly ready.

One feature of the central-plant would be the construction of large interceptor sewers, up to 144-in. in diameter, under the beds of the Allegheny, Monongahela, Youghiogheny and Ohio rivers. If this plan is adopted it is tentatively planned to use precast concrete pipe supported on precast concrete collars and piling driven below the riverbeds.

John L. Laboon and Ellis E. Bankson, both consulting sanitary engineers, are chairman and managing engineer, respectively, of the Allegheny County Sanitary Authority. Metcalf & Eddy, Boston, are consulting engineers.—*J. R. C.*



Map of Allegheny County shows the relative areas of Pittsburgh and the townships under the jurisdiction of the county's huge sanitary authority.

VA-Army hospital building program made ready for new year speed-up

Veterans Administration and Corps of Engineers release lists of jobs ready for bidding in coming months

Working to implement the Veterans Administration's $1,100,000,000 hospital construction program, Army engineers and the VA last month awarded contracts on more than $15,000,000 worth of construction, and readied a score of other jobs for bidding early in 1948.

Among the contracts awarded were: A $9,016,000 contract covering construction of the main building at the VA hospital in Buffalo, N. Y., to Fleisher Engineering and Construction Co. of Buffalo; a $5,245,000 contract for a VA hospital at Grand Island, Neb., to the Henry Carlson Co. of Sioux Falls, S. D. and the Lovering Construction Co., St. Paul, Minn., joint bidders; and a $675,000 contract for foundations and general excavation work for the Newark, N. J., hospital, to the Terminal Construction Co., Woodridge, N. J.

As the year 1947 ended, VA already had in service a total of 126 hospitals providing 102,000 beds. The agency's current construction program comprised three definite programs—the "1947 program," to cost about $800,000,000 and provide 40,000 beds in 74 new hospitals and two additions; the "1948 program," to cost $236,000,000 and provide 11,000 beds in 14 new hospitals and one addition; and the "1948 addition and conversion program" to cost about $40,000,000.

Of the 76 projects in the first program, the Corps of Engineers is to build 71 new structures and one addition, the remainder to be designed and built by VA itself. Most of the projects on this calendar are expected to be under contract before the end of the year.

Bid openings scheduled

The Corps of Engineers scheduled a series of bid openings for the early months of 1948. These include:

January: 5th—250-bed hospital at Big Spring, Texas, and 500-bed structure at Omaha, Neb.; 12th—200-bed hospital at Ft. Wayne, Ind.; 20th—200-bed Beckley, W. Va., project; 22nd—250-bed structure at Iron Mountain, Mich.; 23rd—200-bed hospital at Altoona, Pa., and 29th—300-bed hospital at Wilmington, Del.

February: 2nd—Wilksboro, Pa., 475 bed; 9th—Little Rock, Ark., 500 beds; 17th—Erie, Pa., 200 beds, and 19th—Albany, N. Y. This last opening was originally scheduled for Jan. 26.

Opening of bids on VA-handled projects are somewhat more uncertain, only one being definitely set at this time. This will be for construction of a 350-bed enlargement of the Minneapolis hospital, and bids will be called on March 3. Other jobs up for early bidding, however, will be a 200-bed hospital at Saginaw, Mich.; a 500-bed hospital at Indianapolis, Ind.; a 750-bed structure at Atlanta, Ga.; 1000-bed hospitals at Oklahoma City, Los Angeles, San Francisco, Chicago, New York and Cleveland, and a 500-bed structure at Denver, Colo.

C. L. Wartelle resigns as Seattle city engineer

Charles L. Wartelle, city engineer at Seattle, Wash., since 1938 and an employee of the department since 1907, retired Dec. 31, because of ill health.

Mayor William F. Devin accepted Wartelle's decision "with regret" but is asking the city council to employ Mr. Wartelle by contract for one year as consultant to the department, "in order that the city and the new management of the engineering department may receive the benefit of Mr. Wartelle's knowledge and experience."

Since joining the department in 1907, Mr. Wartelle has held virtually every post in the public-works organization.

Work will start soon on 1,500-mi. gas pipeline

The Michigan Consolidated Gas Co. of Detroit announced recently that construction of a $104,000,000 natural gas pipeline to extend 1,500 miles from Guymon, Okla., to Michigan and Wisconsin will start this month. It will take about three years to complete negotiations for rights-of-way and make the installations.

It is reported that the line will carry a capacity load of 350,000,000 cu. ft. of gas daily.

San Diego County wants Tijuana sewage treated

The U. S. Public Health Service has assigned Maj. R. F. Poston and F. F. Friedkin, engineer, to make an investigation of the Lower Tijuana Sanitation District following the request of the San Diego County supervisors that immediate steps be taken to treat sewage from the city of Tijuana, Mexico. The San Diego request was made through the commissioners of the International Boundary and Water Commission because matters of this kind affecting both nations come under the purview of the commission.

The California State Beaches and Park Commission is withholding plans for establishing a state park in the vicinity of Imperial Beach until the untreated sewage from Tijuana, which flows through a pipeline into the Pacific Ocean at the Imperial Beach point, is stopped. This would call for a sewage disposal plant at Tijuana, probably to be built as a joint project with San Diego county.

States, cities prepare hospital plans

President Bevis of Ohio State University and Director of Public Works Sowers of Ohio have determined that bids will be received on Feb. 17 for the $7,000,000 hospital building at Ohio State University.

Plans have been prepared by Skidmore, Owings and Merrill of Chicago, Ill. The hospital will provide 600 beds on 11 floors.

The Defiance, Ohio, city council has authorized Mayor Edward S. Bronson to create a Board of Hospital Commissioners to supervise construction of the Defiance Memorial Hospital, for which a $500,000 bond issue has been approved by voters. A Defiance Hospital Board also was authorized to act in an advisory capacity to Safety Director Walter L. Buchholz, who will operate the hospital under Ohio law.

The Rochester, N. Y. Hospital Fund, Inc., has selected a tentative site for the $3,220,000 new north side hospital.

C. K. Newberg Construction Co., Chicago, Ill., was awarded the general contract, Dec. 17, by the St. Joseph County Board of Commissioners for $851,388, for reconstruction and modernization of Healthwin Hospital in South Bend, Ind. The total of contracts was $1,549,836. Another contract awarded was to the United Heating & Plumbing Co., South Bend, for heating, plumbing, ventilation and air conditioning, $330,174.

The project will be financed by bond issues. Construction will start in 30 days, with completion in one year.

South Carolina has allotted $4,100,000 for a clinical hospital plant for the S. C. State Medical College at Charleston, S. C.

HIGHLIGHTS OF MUNICIPAL DEVELOPMENTS

Summarizing current activities in city engineering and construction throughout the country.

City, county and state to share cost of Chicago's southwest superhighway—Many sewer projects—New traffic rules in Dayton—Boston's port improvements to include new piers, terminal

The Cook County, Ill., board has approved a tripartite contract to share with the city and state the cost of Chicago's southwest superhighway, to be built along the abandoned Illinois and Michigan canal. Designs for this project are practically completed for roadway, sewers, drainage and grade separations on the two-mile section of the route which will run between Cicero and Kedzie avenues.

L. E. Alswede, Chicago district engineer for the Illinois State Division of Waterways explained that the route of the old canal will be used as far as possible. The canal itself is about 90 ft. wide and there is a reserve area of another 90 ft. on either side.

Court action may be required to establish ownership of certain sections of land in the reserve, and also to rule on the claims of several railroads whose tracks border the canal or are laid in part on the reserve land.

A group of 17 buildings on 12 sites on the West Side will be demolished to make way for the west superhighway.

Water and sewers

Sewer and water projects, led off by major financing operations in several cities, held the attention of municipal authorities during the week. At Tulsa, Okla., Jan. 27 was set for balloting on a proposed $17,865,000 water and sewer bond program; and voters of San Antonio, Tex., approved a $6,000,000 sewer bond issue — $1,500,000 of which will be used to enlarge the sewage treatment and disposal plant and the balance for mains and laterals to serve new areas.

Work is to start soon on a sewer system to serve newly-annexed areas at Mobile, Ala., at an estimated cost of $2,000,000, including collector lines and two treatment plants. Plans have been prepared by J. B. Converse & Co., local engineers.

Tentative plans for a reservoir with a capacity of 300,000 to 500,000 gal. were disclosed at Binghamton, N. Y., to provide water for a residential area north of Ross Park. City council will be asked to provide funds for construction of a pumping station next spring.

Other action reported during the week included: Voters at Wilson, N. C., approved a $1,750,000 bond issue for municipal improvements including the sewer systems; Kinston, N. C., voters approved a $1,600,000 municipal bond issue, of which $425,000 will be used for water, storm sewers, and sanitary sewer improvements; Quincy, Fla., have voted in favor of a municipal bond issue of $200,000 for improvements to the water system. Deep wells would be abandoned and water obtained from Quincy Creek and a filtering plant.

Construction has begun on a municipal water plant expansion at Connersville, Ind., to alleviate a critical water shortage; engineers estimated the cost of a new sewer system and disposal plant for the twin cities of Bristol, Tenn.-Va., at $3,300,000 in a report to the joint city sewerage committee, and Rock Hill, S. C., will raise funds by bond issue to finance a $600,000 sewer extension and new outfalls to the Catawba River, and $1,000,000 for water system expansion and improvements.

Underpasses for Ft. Wayne

The board of works at Fort Wayne, Ind., has confirmed resolutions for the building of underpasses at seven intersections in the Nickel Plate Railroad elevation project at a total cost of $6,625,000. The project has been under discussion for 30 years. This is the last legal step before the city can prepare for construction bids.

The city plans to create a new cross-city north-south traffic arterial which the building of an underpass at Fairfield Ave. will make possible. There will also be a new bridge over St. Mary's River as a part of the new north-south thoroughfare, badly needed.

St. Petersburg hospital

The city council of St. Petersburg, Fla., has approved recommendations of its hospital committee that the city build an entirely new hospital costing an estimated $3,500,000 and eventually dispose of Mount Park Hospital.

It was proposed that the new structure have from 325 to 375 beds and be so constructed that later additions could be made.

***City Airport**—Mayor Karl B. Robertson (fifth from left) of Midland, Mich., receives title to his city's new airport from William Fisher, general superintendent for the Fisher Sand and Gravel Co., contractors, at recent ceremonies. The airport—equipped with three 2,000-ft. sodded runways and paved taxi-ways—is located a mile north of the city limits, and is one of the first U. S. airports completed under Civil Aeronautics Administration specifications for a Class I airport. The field was designed by the American Airport Engineering Co., of Columbus, Ohio.*

Atlanta filtration

Paul Weir, general manager, has been instructed by the city council's water committee of Atlanta, Ga., to prepare specifications and to seek bids on a $601,619 improvement for the Hemphill Station filter system. The work will involve elimination of bottlenecks in filtration by providing additional mains to and from the filtration units.

Traffic control

A new $210,000 traffic signal system to control both pedestrians and vehicles went into effect at Dayton, Ohio on Dec. 15.

The safetly council of the Chamber of Commerce gave out these rules:

"ONE—There are two separate systems, one for motorists and one for pedestrians. It will be necessary to watch only the one that applies to you.

"TWO—Traffic signals for automobiles will have four lights, the extra green one being for right turns. In turning, approach the lane from the proper position and don't make too wide wide a turn.

"THREE—Flashing amber lights have replaced the steady amber formerly used for police and fire emergencies. Traffic may proceed at a reduced rate of speed on the flashing amber. The RED light means there is a major movement of emergency vehicles in progress. All traffic will stop on a four-way RED light.

"FOUR—'WALK' and 'DON'T WALK' signs for pedestrians wil be in operation only on Jefferson, Main and Ludlow sts. Further the RED emergency lights will be used only in the downtown area. The flashing amber will be used on all main approaching thoroughfares and in the downtown area when there is a minor emergency run in progress."

Bonus for bricklayers

A $10-a-day bonus Cleveland, Ohio, paid to three bricklayers recently was said to have been an emergency measure adopted only when every other means failed to get bricklayers at union wages. The work was on the heating plant at the City Hospital and although urgent, it was delayed for two weeks while the city vainly tried to find workers at union scale.

Observers said commercial builders for some time have been forced to offer bonuses of from $2 to $7 a day in order to keep bricklayers on their jobs, and in the "help wanted" columns of local newspapers employers openly advertise for bricklayers at $2.50 to $3.15 per hour per 8-hour day although union wage scale is now $2.25 per hour.

Water Celebration—Marking the advent of "soft" water into its mains with the completion of the $4,000,000 Lake Kickapoo reservoir, citizens of Wichita Falls, Tex., celebrated with a parade, floats, cowboy riders and bands. The new supply is said to be adequate for a city twice the size of the present community, and removes dependence on Lake Wichita and Lake Kemp. The 105,000 ac.ft. of water stored in the new reservoir is brought to the city in a 26-mi. closed conduit of 48-in. and 39-in. diameter.

Boston port plans

Director J. A. Crothers has announced details of the Boston, Mass., Port Authority's $19,555,000, modernization and expansion program which may be completed by 1951. The Hoosac Pier No. 1 at Charlestown would be made a 3-berth finger type pier and transit shed with facilities for handling large cargo. Grain handling would be speeded up by new equipment. The total cost is $4,225,000 and a $248,850 contract for excavation, dredging and filling has been awarded to the Bay State Dredging and Contracting Co.

Mystic Terminal construction at Charlestown is scheduled to start in 1949 and will include new pier facilities on sites 46 and 47. There is a long range plan for development of piers 48, 49 and 50. Construction costs will total $6,000,000.

East Boston terminal work will include demolition of the Boston & Albany Pier No. 2 and reconstruction will go along with similar reconstruction of Commonwealth Pier 1. The cost is estimated at $7,500,000.

Castle Island Terminal will include repairs to wharf facilities, new track and access road construction, a new transit shed and the acquisition of U. S. property on the site. The total cost is estimated at $1,830,000.

CONSTRUCTION NOISE CONSTITUTIONAL

A 10-year-old anti-noise ordinance of the city of Miami Beach, Fla., banning heavy construction between Nov. 15 and March 31, has been ruled unconstitutional by Circuit Judge Marshall C. Wisehart.

An order has been signed by the jurist granting a motion by attorney for the 186-room Delano Hotel, now under construction, to dismiss an injunction suit which had been brought by the operators of the adjoining National Hotel in an effort to stop construction work.

The ordinance was adopted by the Miami Beach city council in 1937 in a move to eliminate the noise of heavy construction during the winter tourist season, and heretofore had never been questioned.

Fight erosion

Atlantic City, N. J., will shortly start dredging sand from the southwesterly tip of Brigantine and depositing it on the Inlet beaches where most urgently needed as a part of a new project to combat erosion in the uptown area.

The project will start as soon as final permission is granted by the State Division of Navigation. City Engineer George Swinton drew plans for the job, which he estimates will cost $350,000.

Tennessee orders cities to improve sewage disposal

The Tennessee State Stream Pollution Control Board has ordered the cities of Murfreesboro and Harriman to improve their sewage disposal systems in order to stop illegal pollution of streams near the two communities.

A public hearing was set for Jan. 14, to air further developments in the Harriman case, where the city and two nearby industrial plants are charged with polluting the Emory River. R. P. Farrell, secretary of the board, said that the city and the private concerns must provide adequate disposal plants at the earliest possible time.

Murfreesboro was ordered to proceed as rapidly as possible with sewage plant improvements estimated to cost $300,000. "Tolerance permits" were issued until orders could be complied with by the city.

Start flood surveys on the Maumee River

A survey embracing control of floods on the Maumee River in Indiana and Ohio, has been started at Fort Wayne, Ind., by four U. S. Army engineers. The survey was recommended by the federal government following recommendations made by Army engineers after two flood control hearings in Fort Wayne.

The survey will embrace the degree of economic justification, degree of local cooperation, and extent, if any, to which the United States should participate in the improvements.

The Corps of Engineers has also been requested by Governor Ralph F. Gates of Indiana to make a detailed study of state flood control projects on the upper east fork of White River tributaries which are estimated to cost from $10,000,000 to $12,000,000.

Government to be asked for many fish hatcheries

The federal government will be asked to foot the bill for 29 new fish hatcheries in the Pacific Northwest on the ground that government-built dams have drastically reduced fish resources in the region.

A 6-year program for restoring fish runs for the Columbia River and its tributaries has been worked out by the Oregon fish commission and the Washington director of fisheries, in cooperation with the U. S. fish and wild life service. The program calls for 11 new hatcheries in Oregon and 18 in Washington.

Congress will be asked to authorize an expenditure of $10,000,000 for hatcheries and stream improvement along with annual appropriations for keeping the hatcheries in operation, proponents announced.

Department store has special foundations

Recently completed at Fort Lauderdale, Fla., is a new Burdine's department store with the foundations of a special design dictated by local conditions. At the site the water table is only 2 ft. below the surface and studies showed the rock foundation material, which appears almost at the surface, to be very porous. Since it was uncertain how successful piles would be, special foundations consisting of a grid of heavily reinforced beams the largest 12 ft. wide and 9 ft. deep were used.

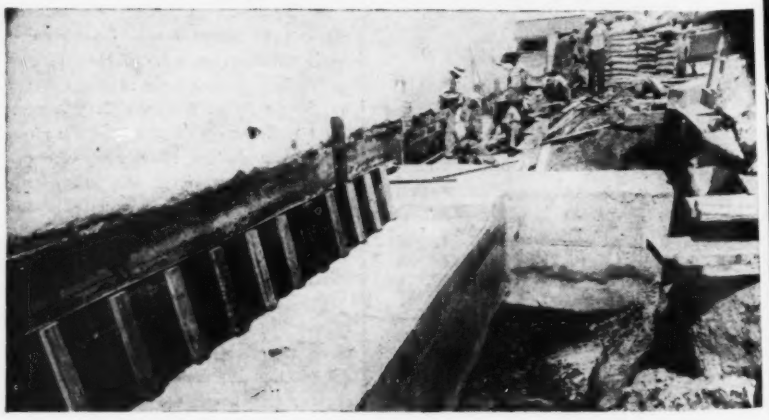
The structure provides 125,000 sq. ft. of floor space and it was made three stories high with the design allowing for addition of three additional stories if this latter proves desirable. Spacing of the steel columns on all floors is 24x38 ft. Floor construction called for the use of ribbed steel sub-flooring that simplified installation of telephone and lighting facilities.

The two sides of the structure seen from the street are almost entirely windowless and the walls consist of terra cotta faced with limestone and granite. The rear walls are stucco over terra cotta. Delivery of materials was expedited by use of lift forks for handling supplies.

Because no basement was used, in view of the high water table, the machinery for airconditioning the entire structure was placed on the roof in a small penthouse. The equipment has a capacity of 5,000 tons per day.

Caldwell-Scott Construction Co. of New York and Florida was the general contractor, and Abbott & Merkt Co., New York, architects and engineers.

Special attention was given to the finished appearance of the structure, and an adjacent parking garage was built for customers of the store.



Foundations called for a grid of heavy beams connecting all of the columns.

Southeast road men discuss problems

Inspection of Florida highway projects, discussions of new techniques in designs and difficulties now being experienced in construction programs featured the sixth annual convention of the Southeastern Association of State Highway Officials held Dec. 7-11 in Miami, Florida.

W. G. Pruett, office engineer of the Alabama State Highway Department, was elected president to succeed F. Elgin Bayless, chairman of the Florida Road Department. Other officers elected included A. E. Johnson, office engineer of the Arkansas State Highway Department, vice-president; and A. R. Harvey, chief of planning survey for the Alabama Highway Department, was appointed secretary-treasurer by Mr. Pruett.

Concrete deterioration

A highlight of the meeting was the discussion of concrete deterioration in Georgia by W. F. Abercrombie, engineer of materials and test for the Georgia Highway Department. Mr. Abercrombie pointed out that this deterioration is associated with alkali-reactive aggregates and that inspection of approximately 100 bridges throughout the state indicate that most have developed severe cracks. Inspections have revealed that failure has not been due to faulty inspection or construction.

Mr. Abercrombie called attention to the similarity of the pattern cracking in the Georgia structures with those reported between 1940 and 1943 in California. Over a hundred Georgia structures have been examined and most show some failure. Tests are being made on materials and it has been found that great expansion has taken place where high-alkali cement has been used with aggregates that react to such cement.

T. V. Fahnestock, bituminous engineer for the North Carolina State Highway Commission, related satisfactory experience with sand-bituminous surface courses for secondary and farm-to-market roads. He said that such roads are usually constructed to have a thickness after compaction of about 4 to 5 in.

Mr. Fahnestock expressed the belief that the state has effected a saving in its present policy of doing light grading and shaping, as well as installing small drainage structures with state forces when letting work to contract. The department maintains 20 surface treatment outfits which operate with state forces. These do practically all of the retreatment work and in 1946 placed 480 miles of new surface treatment on secondary roads.

W. Vance Baise, North Carolina highway engineer, discussed the secondary road program in the state and observed that the program has been handicapped by lack of qualified engineers and inspectors. He said that primary roads should not be neglected in order to expand work on secondary roads as in the latter case traffic may not be sufficient to justify the cost of placing and maintaining a light pavement over them.

Prior to the association meeting, the joint cooperative committee of the Associated General Contractors of America and the American Association of State Highway Officials adopted a resolution endorsing federal legislation to enable long-range planning of highway construction programs by the states.

Road building costs continue to rise

During the third quarter of this year highway construction costs continued to rise as shown by the composite mile index of the Public Roads Administration, which has been placed at 142.9 for that quarter as compared with 138.0 for the previous quarter. The figure for the third quarter is the highest the index has ever been. It compares with an average of 122.9 for 1946.

Approve $75 million Quebec hydro jobs

Installation of more generators in the large Beauharnois power station on the St. Lawrence River, 30 miles upstream from Montreal, has been authorized by the Quebec government.

Authority to develop a further 600,000 hp. at an estimated cost of about $40,000,000 has been granted to the Beauharnois Light, Heat and Power Co., which is administered by the Quebec Hydro Electric Power Commission, thus providing for the full utilization of all unclaimed water power resources on the St. Lawrence between Lake St. Francis and Lake St. Louis. With this full development of the Beauharnois project the existing provincially-owned Cedar Rapids plant, (also located on the St. Lawrence between the two lakes and generating 175,000 hp.) would be superseded, its flow being used more efficiently in the Beauharnois plant.

In the same announcement, Premier Maurice Duplessis gave details of a new power development of the Shawinigan Water and Power Co. on the St. Maurice River at LaTrenche rapids, also authorized by the provincial government. This new station will develop 384,000 hp. at an estimated cost of $35,000,000. Work is to start next June. The plant will be one of a series planned for the full utilization of the St. Maurice—the Shawinigan Company is already building a new power station at Shawinigan Falls.

U. S. Navy photo

***Walking Barge**—An amphibious, self-propelled barge capable of pulling itself out of quagmires, soft mud or sand has been successfully tested by Naval engineers at Port Hueneme, Calif. Moving on the same principle as a walking dragline, the barge consists of three pontoons, the two outside units being 60 ft. long, six ft. wide and nine ft. high, and the inboard pontoon 44 ft. long, 16 ft. wide and nine ft. high. All three pontoons are divided into watertight compartments. The vehicle can carry 60 tons of cargo.*

MEN AND JOBS

Col. Mason J. Young became division engineer, South Atlantic Division, Atlanta, Ga., on Dec. 15, succeeding **Col. George W. Gillette,** who is retiring from the Army to direct the North Carolina Ports Authority. Colonel Young was graduated from West Point, 1915. He served on the Mexican border and later went to France as captain of the 604th Engineers. He took command of the Seventh Corps of Engineers in July, 1941, and led it throughout the war. He directed the construction of all the bridges across the Roer and Meuse rivers.

Nathaniel C. Saxe, consulting engineer, announces the moving of his office from 303 Washington Street, Brooklyn, to 122 East 42d Street, New York 17, N. Y., as of Jan. 1, 1948.

H. R. McDonald of the U. S. Geological Survey, groundwater division, Phoenix, Ariz., has been named liason officer between the survey and the U. S. Bureau of Reclamation in Denver, Colo. He has been replaced in the Phoenix office by **H. M. Babcock** who will supervise the agency's work in central and northern Arizona.

L. B. Griffith, consulting engineer, formerly at Austin, Tex., has opened offices in the Central Building, Washington, D. C., where he is working on sewage treatment projects, three of which are now under construction near Washington. Mr. Griffith was graduated from West Point in 1917 and in the first world war he commanded pontoon bridge units for the Meuse River crossings. He received his C.E. degree from M.I.T. in 1921 and later that year he was resident engineer in charge of the construction on the Ohio River Dam near Cincinnati, built by the Corps of Engineers. Since leaving the Army he has practiced engineering in Texas, specializing during the last eight years in hydraulics and anti-stream pollution work.

Edgar Bennett, chief engineer, maintenance of way and structures, Southern Railway, Knoxville, Tenn., has been appointed chief engineer at Charlotte, N. C., succeeding **Theodore M. von Sprecken,** who becomes assistant to the chief engineer at Washington, D. C. **Robert F. Logan,** superintendent at Atlanta, Ga., has been transferred to Knoxville to succeed Bennett and has been succeeded at Atlanta by **Robert G. Claiborne,** who has been serving as superintendent of the Kentucky and Indiana Terminal Railroad Co. at Louisville, Ky. Bennett has been with the Southern since 1909, having served as rodman, assistant engineer, resident engineer, roadmaster and assistant chief engineer. Logan has been with the company since 1925.

W. A. Osborne, who has been in charge of engineering examinations for New York State Civil Service department, has resigned to enter the private practice of engineering at Malden Bridge, N. Y. His place is taken by **H. B. Compton,** for many years on the faculty of R. P. I.

Fred Crannage, a draftsman with the New York State Department of Public Works for the last 18 years, has resigned to go with the Albany Design Co. of Albany, N. Y.

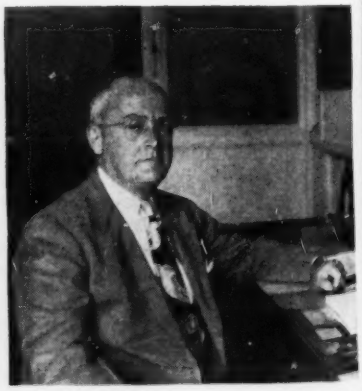
Frank A. Looker, R. P. I. 1943, and **Charles Bartholomew,** Rice Institute Class, 1943, are new employees in the Bureau of Bridges and Grade Crossings, New York State Department of Public Works.

Erie Norton has been promoted from Senior Claims Engineer to Associate Civil Engineer by the New York State Department of Public Works and has been transferred from Albany to Buffalo.

Robert E. McLaughlin has left McCloskey & Co., Philadelphia, Pa., where he has been chief engineer for the last five years, to go into private practice as structural engineer. Prior to his service with McCloskey & Co., he was connected with the School District

Robert B. Richardson has assumed his new duties as acting director of the Louisiana State Highway Department, replacing Col. P. A. Frye, who resigned recently to resume his duties as secretary and executive officer of the Louisiana Public Service Commission. Mr. Richardson, 46, has been with the department for 26 years, and was construction and maintenance engineer since 1940. He is a graduate of Louisiana Tech in 1920 and joined the highway department the next year.

President Blake R. Van Leer of Georgia Tech pointing out details of foundation of the new $1,500,000 textile building at the ground-breaking ceremonies held last week and which were attended by leading textile and civic officials. In the middle is Governor M. E. Thompson of Georgia and on the right is Frank B. Williams, president of the Georgia Textile Education Foundation. Ray M. Lee, Atlanta, is the contractor, and Bush-Brown, Gailey & Heffernan are the architects.



John A. Canton has become chief engineer, maintenance department, of the Metropolitan Transit Authority, which recently purchased the property of the Boston Elevated Railway Company. Mr. Canton is a Worcester Polytechnic Institute civil engineering graduate, class of 1913. His early experience was in the designing and construction field with various organizations on jobs ranging from Texas to New England. He joined the Elevated company in 1922 and rose from draftsman to chief engineer.

of Philadelphia as structural engineer.

The resignations of **Philip F. Carothers,** Mill Hall, project engineer in District 2, Clearfield, and of **William F. Wagner,** of Smithton, project engineer in District 11, Pittsburgh, have been announced by the Pennsylvania Highway Department.

H. H. Roberts, partner in the engineering firm of Moffat, Nichol & Roberts, Los Angeles, Calif., is chief engineer for Ozark Dam Constructors on the Bull Shoals project. During the war he served as chief engineer for Contractors Pacific Naval Air Bases, for the construction of the Advance Base Depot, Port Hueneme, Calif. Prior to that he was with Guy F. Atkinson Co., Grand Coulee Dam, Mud Mountain Dam, Neah Bay Breakwater and Roosevelt Base at Terminal Island, Calif.

F. C. Woods, of Westmount, Que., a graduate of the University of New Brunswick in civil engineering, has been named town engineer and manager of Dalhousie, N. S.

George N. Lewis, Jr., of Baltimore, Md., has been named director of the traffic division of the Maryland State Roads Commission. Until recently he was traffic manager. Mr. Lewis has been employed by the commission for 20 years. He worked first as a construction inspector and later as a maintenance man in the office and as a county resident maintenance engineer.

G. E. Arnold, recently appointed director of the water department for the city of San Diego, Calif., poses in his new office for an ENR picture. The director's position was created by a recently passed ordinance consolidating the functions of the water department. Under the old organization three separate department heads reported to the mayor on water department activities. Arnold was previously assistant city manager for San Diego.

W. E. Warburton, civil engineer, Nanaimo, B. C., has been appointed municipal engineer of Penticton, B. C., succeeding **Arthur Evans.,** who recently resigned.

Milford Watson, Alexandria, Ind., has been named Madison County superintendent of roads at Anderson, Ind.

Noble Spiker has been appointed city engineer and **Edsel Stevens** superintendent of streets at Vincennes, Ind., by Mayor-elect William L. Betz. **Leon T. Moon** was renamed superintendent of sewers, after serving in that capacity 22 years.

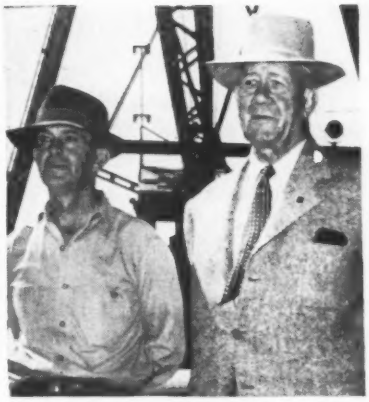
Ward M. Harlan has been appointed Muncie, Ind., city engineer.

Edward D. Hopkins has been assigned by the Public Health Service as sanitary engineer consultant to Region I, Public Housing Administration, including the states of Washington, Oregon, Montana, Idaho, Wyoming, California, Nevada, Utah, Arizona, Alaska and Hawaii. For the last 11 years Mr. Hopkins has been on foreign service assigned to the Pan American Sanitary Bureau as its chief sanitary engineer in South America. In his new work he will have to do with studies, planning, construction, operation and maintenance.

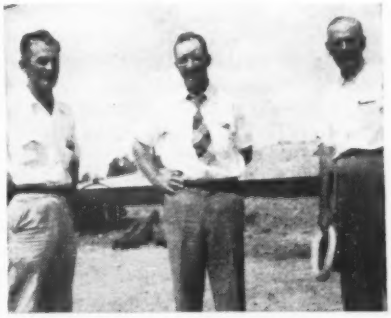
Samuel T. Jacoby, who served in the U. S. Army as battalion engineer officer with the Combat Engineers and was in service from Normandy through Germany, is now general manager and plant supervisor with National Wood Preservers, Inc., engaged in the pressure treatment of lumber at Oakmont, Pa.

G. C. Bullock is general superintendent for Drake Puget Sound on a project at Adak, Alaska. He was formerly project manager for Puget Sound Bridge and Dredging Co., Seattle, Wash., on the high school stadium.

R. W. Pommerer, resident engineer in the Schoharie watershed of the New York City water supply, retired Dec. He served the Pennsylvania R.R. on construction in Altoona, Pa., and in the vicinity of New York Bay. He was also on hydraulic development in Brazil, on a bauxite development in Dutch Guiana and on a hydraulic investigation in Malaya. At various times for 37 years he was with New York City's Board of Water Supply on Catskill Aqueduct studies and construction, and latterly with the Department of Water Supply in Prattsville, N. Y.



Dan Boom (left), construction superintendent, and A. M. Rawn, general manager and chief engineer, Los Angeles County Sanitation Districts, seem pleased as they watch progress on the construction of a new mile-long ocean outfall for the districts. The crane seen in the background is mounted on a barge and is used to place the 6-ft. dia., 24-ft. long pipe sections.



Building the first "3-level" bridge ever constructed by the Virginia Department of Highways is the job of these three men: They are left to right: Dan Bowman, J. S. Lewis, partner of Lewis and Bowman, and R. M. Walton, general superintendent for E. W. Grannis Co.

Intimately familiar with every feature of the Calumet Sag Channel, on which he served as resident engineer during its construction (1909-22), William H. Trinkaus, now chief engineer of the Sanitary District of Chicago, contributes much pertinent information to the day's round-up.

Four southern cities plan stadiums for 1948

All are bond-financed, and will provide seats for 161,000 football fans next season

The construction of stadiums and "bowls" is being considered by a number of cities in Southern states. Among such proposals are:

At Dallas, Tex., a $1,000,000 Cotton Bowl bond issue, assuring a 1948 season capacity of 62,500 for the big football arena, has been over-subscribed. Bids will be acted on soon and construction pushed so that the bowl will be ready for the football season next fall.

Citizens of Hinds County, Miss., have voted in favor of a $700,000 bond issue for construction of a new stadium at Jackson. Present plans are for the stadium to seat 35,000.

The "Gator Bowl"

Plans for the new football stadium of Jacksonville, Fla., to be known as the "Gator Bowl", have been prepared by Marsh and Saxelbye, Jacksonville architects, and O. S. Mead, engineer. The builder is to be the Virginia Bridge and Iron Co. The cost will be about $500,000. To finance the project the city issued that amount in certificates of indebtedness, as authorized by the state legislature. It is expected that the new arena will be ready by next fall and it is planned to seat about 34,000 persons.

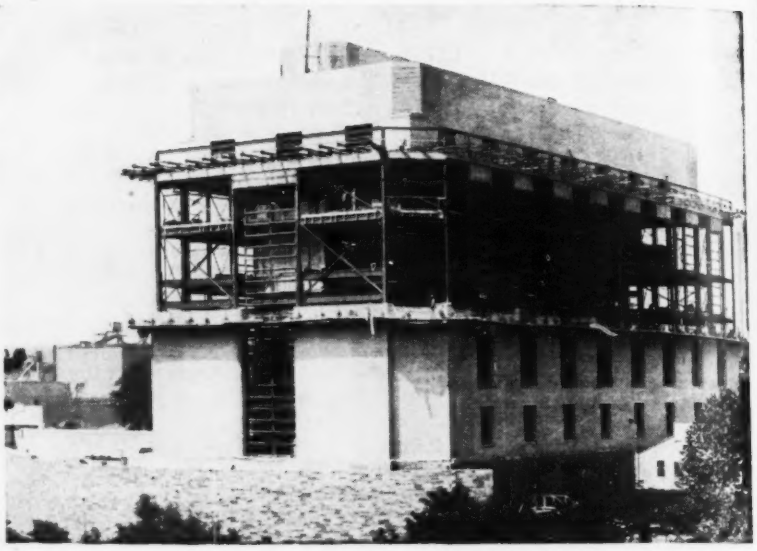
The Harmon Construction Co. of Oklahoma City, Okla., was the low bidder at $1,170,000 for the construction of the war memorial stadium in Fair Park, Little Rock, Ark., to seat about 30,000.

Competition among cities

The stadium bill, which was enacted at the last session of the state legislature, had provided that a city in bidding for the stadium, should subscribe at least $250,000 worth of bonds. However, competition arose to such a point among Little Rock, North Little Rock and Hot Springs, that Little Rock citizens subscribed a half million instead of the quarter million dollars which was originally planned.

However, there are still persons out in the state who have indicated a willingness to purchase a bond on the structure and that is why the commission can issue another $250,000 if necessary for the stadium's construction.

Persons holding bonds on the stadium will have priorities for the purchase of tickets for football games and other events to be held in the arena from time to time.



Heating Beauty—Except for an occasional puff of steam, there is little to indicate that this structure is a new federal heating plant in the western part of Washington, D. C. The plant will eventually contain six boilers each with a steam capacity of 220,000 lb. per hour. To avoid necessity of chimneys, induced-draft fans were used, and the short stub stacks extending above the roof were shielded from view by an open brick wall. The $7,750,000 project was planned by the Public Buildings Administration, and the Chas. H. Tompkins Co., Washington, D. C., was general contractor.

Massachusetts employers charge labor "chaos"

The Building Trades Employers' Association of Springfield, Mass., has appealed to members of the state legislature for some form of relief from a chaotic labor situation.

Special pay inducements by some owners and contractors, and excessive pay demands by some unions are among the complaints that have led to cancellation of many building plans, the association charged.

The Building Trades Employers' Association is composed of 172 contractors and 24 material dealers located in Springfield, Holyoke, Westfield, and surrounding communities.

B. Halsey Spencer, executive secretary of the association, said the group is directing its attack at "industry, certain types of out-of-town contractors and large organizations which want structures erected regardless of cost and who are willing to pay premiums to get buildings up."

Bricklayers on construction jobs at the University of Massachusetts, at Amherst, are said to be paid $159.90 a week, and at the $3,000,000 A. G. Spalding & Bros. new plant in Chicopee, employees of the contractor demanded $3 a day for expenses on top of their wages, Mr. Spencer said.

Create development group for Arkansas basin

A 29-county organization—the Arkansas Basin Development Association—which has been under construction for a long time—was formed at a recent meeting of representative landowners, government engineers and business and industrial leaders at Little Rock, to support government plans for development of the Arkansas River from Fort Smith to the Mississippi.

The association's development program proposes:

Development of the water resources of the Arkansas and its tributaries as provided for in the multiple purpose plan of the U. S. Army Corps of Engineers, approved by Congress several months ago.

Investigation, study and co-operation "with local and other authorities, including also presentation before federal, state and other authorities, any matters that may be involved in the improvement of the river valley."

Development of navigation from the mouth of the river to Tulsa, Okla.

Development of the maximum amount hydro-electric power that may be available.

The use of the waters for industrial, municipal and social purposes to the greatest possible extent."

Dry ice in a rubber pocket . . .

Plus alcohol for solution . . .

Makes temporary ice plug

Quick-Freeze Plugs Water Service Pipes for Quick Repair

John L. Ford, The Ford Meter Box Co., Inc., Wabash, Ind.

When curb valves on water service pipes must be replaced, or when street-widening makes it necessary to lengthen the service to the curb valve, it is a big advantage to be able to shut off the pressure quickly. Although the freezing of temporary ice-plugs in water pipes during valve changes or other repair has been common practice for many years, the following quick-freeze method is notable for its simplicity, speed and economy.

Materials needed to freeze an ordinary ¾-in. service water pipe include about 1 lb. of dry ice, an 8x10-in. piece of old rubber inner tube, two large spring-type paper clips, and about one-fourth pint of alcohol. In addition, the repairman should have a piece of strong cloth and a hammer for pulverizing the dry-ice.

Use paper clips

The piece of inner tube is centered under the pipe at the location selected for forming the ice plug. Its ends are brought up around the pipe and fastened with the paper clips. The rubber tubing should not be stretched tight from end to end but should be loose enough to form a pocket around the pipe.

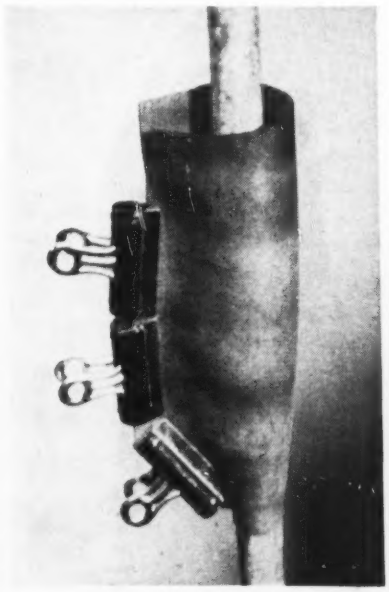
Pulverized dry-ice then is poured into the rubber pocket and about one-fourth pint of alcohol poured over the ice. Addition of the alcohol—or some other solvent such as anti-freeze, gasoline, or naphtha—produces a mushy mixture which is so cold and makes such good contact with the pipe that the water inside is quickly frozen.

For ¾-in. pipes having a flow of not more than 1/30 gpm. (about ¼-pint per min.) the ice-plug will be formed and the flow stopped in from two to five minutes. The use of alcohol or other solvent is very important, as it takes several times as long to freeze a service pipe using dry-ice alone.

In freezing a leaky service pipe by this method it will be noticed that after the pipe is frozen solid at a point between the source of supply and the leak, the amount of drip will increase noticeably for several seconds. This results from additional pressure being introduced in the line, caused by expansion of the water as it freezes, and it may deceive the repairman into thinking the plug has not been completely formed.

Testing the line

When there is no visible leak, or drip, the best method of testing the line to see if the ice plug completely fills the pipe is to leave the valve closed for 5 min. after the dry-ice and liquid have been placed around the pipe, then open the valve cautiously. Even if the plug completely fills the pipe there will be some flow at the valve until the water between the plug and the valve is exhausted. But if this flow, or drip, continues after a reasonable length of time, the ice plug probably has not been completely formed. In this case the valve should be quickly closed and the plug permitted to freeze for an additional 5 min.



Three paper clips are needed to form a pocket for the dry ice if a plug is to be formed on a vertical pipe.

The pipe can be kept frozen as long as desired by adding dry-ice as necessary, although 1-lb. of dry-ice will keep a ¾-in. pipe frozen for nearly an hour, under ordinary conditions. After the repairs have been completed the rubber envelope can be removed and the ice plug thawed with hot water or a blow-torch.

If the flow can not be reduced to about one-half pint per minute the pipe can not be frozen by this method, and with this equipment, because the warm, flowing water will keep a small opening melted through the plug. A longer pocket obviously would freeze a greater flow, but large flows can not be stopped successfully unless they can be reduced to a rate that will freeze quickly.

This quick-freeze method of repairing service pipe also is applicable to vertical pipe. In such cases a liquid-tight joint around the pipe can be made by pressing a small amount of moist clay, wax or chewing gum into the corner between the pipe and the bottom clamp. There clips are needed in this case; one at the bottom and two on the side of the rubber pocket.

In using dry-ice for freezing water pipe, it should be remembered that while the carbon-dioxide gas given off is not poisonous, it can cause suffocation if breathed in too great concentration. However, the small amount of dry-ice needed to freeze a ¾-in. pipe, and the natural ventilation in an open trench, makes the danger from this source almost negligible.

THE CUSTOMERS TELL US

This is a "man bites dog" version of what we have been saying in our advertisements for these many years — namely, that the great majority of the *original* cast iron water mains, laid in this country from the earliest days, are still in service. Now our customers give *us* the facts—facts secured *by* users, *from* users, *for* users.

The chart shown on the opposite page is based on a published report of the American Water Works Association of the results of a survey of the "Survival and Retirement of Water Works Facilities" in 25 representative cities. These are facts taken from the records. *They show that 96% of all cast iron water mains ever laid in the 25 surveyed cities, since 1817, in sizes 6-inch and over, are still in service.*

Cast iron pressure pipe production for the year 1947 has exceeded the footage produced in any other peacetime year in the history of the industry, and with increasing availability of raw materials, still greater production can be expected.

Mr. Q-Check says *"Utica, New York, laid its first 6-inch cast iron pipe 99 years ago and 98% of all cast iron pipe of that size ever laid is still in service.*

All statements and percentages regarding service records of cast iron mains set forth in this advertisement are based on published reports of a survey directed by a Joint Committee representing the American Water Works Association, New England Water Works Association, and the Institute of Water Supply Utilities. The findings, as they apply to cast iron pipe, have been reprinted by permission in our brochure "Survival and Retirement Experience with Cast Iron Water Mains." If you have not received a copy, write to Cast Iron Pipe Research Association, Thomas F. Wolfe, Engineer, 122 South Michigan Avenue, Chicago 3, Illinois.

CAST Q IRON

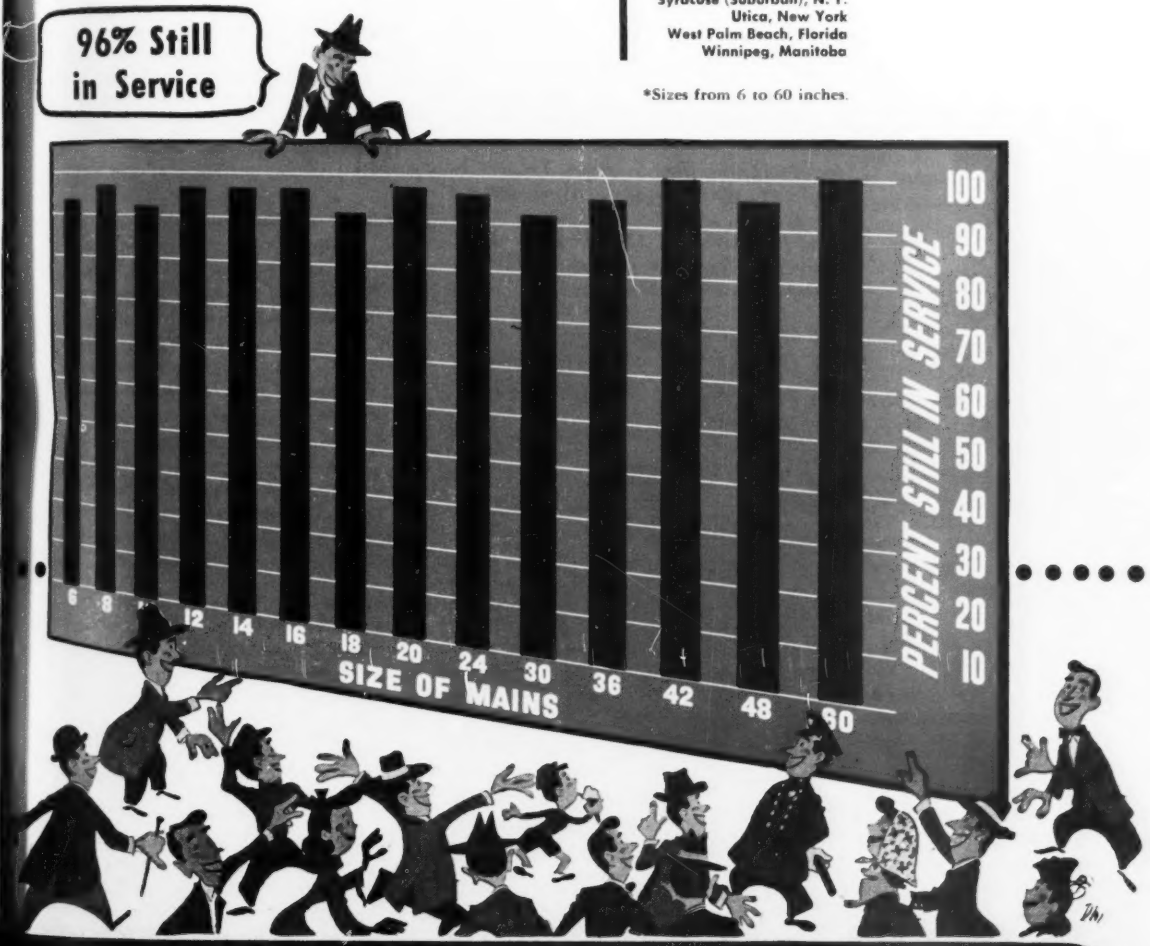
CAST IRON PIPE

U[illegible]OW GOOD OUR PIPE IS!

[illegible]% OF ALL CAST IRON WATER MAINS LAID IN THESE 25 CITIES OVER A PERIOD OF [illegible] YEARS IS STILL IN SERVICE.

Alexandria, Virginia
Babylon, New York
Clinton, Iowa
Clyde, New York
Denver, Colorado
Des Moines, Iowa
Detroit, Michigan
Huntington, West Virginia
Jamaica, New York
Merrick, New York
Norwich, New York
Ottawa, Ontario
Philadelphia, Pennsylvania
Portland, Maine
Rochester (Suburban), N. Y.
St. Mary's, Pennsylvania
St. Paul, Minnesota
Sag Harbor, New York
Scranton, Pennsylvania
Springfield, Massachusetts
Summit, New Jersey
Syracuse (Suburban), N. Y.
Utica, New York
West Palm Beach, Florida
Winnipeg, Manitoba

*Sizes from 6 to 60 inches.



E SERVES FOR CENTURIES

ENGINEERING SCHOOL NEWS

Sanitary science laboratories dedicated at M.I.T. — Public works planning lectures for N. Y. State engineering students

The William Thompson Sedgwick Laboratories of Sanitary Science, dedicated in the department of civil and sanitary engineering at the Massachusetts Institute of Technology recently, are designed for teaching sanitary engineering and to provide a thorough knowlege of the chemical and biochemical reactions which take place in the treatment of water, sewage, and industrial wastes.

John B. Wilbur, head of the department, presided at the dedication exercises, and Samuel C. Prescott, dean of science emeritus and formerly professor of industrial biology at the Institute, described the work of Professor Sedgwick, who made many important contributions to sanitary science and public health.

Arthur D. Weston, chief engineer of the Massachusetts Department of Public Health, spoke on laboratory training and sanitary engineering practice, and Gordon M. Fair, dean of engineering of the Harvard Graduate School of Engineering, discussed the laboratory and sanitary engineering education.

Professor William E. Stanley, who has charge of the new laboratories, described the facilities of each and the work of its director.

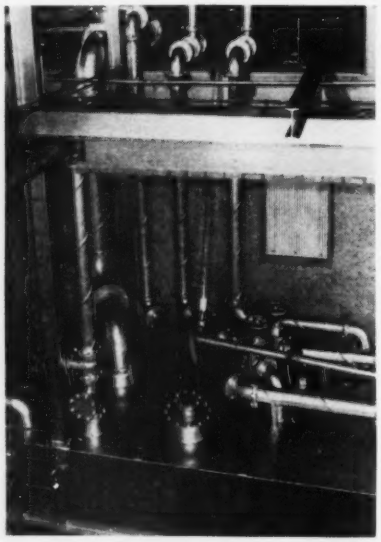
The laboratory of sanitary bacteriology and research, of which Murray P. Horwood is in charge, has equipment for laboratory scale operating units to demonstrate the principles involved in water, sewage, and industrial water treatment.

Clair N. Sawyer is in charge of the laboratory of sanitary chemistry, which is equipped with the latest apparatus for laboratory exercises essential to the teaching of sanitary chemistry, and for chemical analysis of water, sewage, and industrial wastes, including control tests and a knowledge of biochemical reactions.

The laboratory of sanitary engineering, under the direction of Prof. Ariel A. Thomas, includes a bacteriological laboratory and research room, and has facilities for student work and experimental demonstrations. Its equipment includes incubators, a centrifuge, microscopes, and other essential apparatus for each student. Other equipment is provided for careful laboratory study of bacteriology and bacteriological research in water, sewage, and general sanitation problems.

Discussing the importance of the new laboratories in sanitary engineering, Professor Stanley spoke of the many unsolved old and new problems for which research facilities are required. He stressed the importance of thorough knowledge of certain bacteria important to proper sanitation and to the production of pure water supplies, adding that the sanitary bacteriological laboratory provides facilities for instruction in the forms and life processes of such bacteria and also in the laboratory techniques for various tests to guard public health.

Modern practices in public works planning and construction, with special emphasis on highways, will be brought to the attention of engineering college students through a series of lectures now being scheduled by the New York State Department of Public Works. The first was given at Cooper Union, New York, Dec. 8, when Francis L. Brown, executive assistant of the department, and Fred W. Fisch, director of its Bureau of Arterial Route Planning, addressed a meeting of the student chapter of the American Society of Civil Engineering. The subject of Mr. Brown's address was "New York State's Public Works Program — Its Scope and Purposes." Mr. Fisch discussed urban arterial route planning and presented an exhibit on it.



***Pipe Flow Tested** — Friction-loss coefficients of galvanized, spiral-welded steel pipe with formed lap are being determined in the new hydraulic laboratory at Georgia School of Technology, Atlanta, Ga. About 3,000 sq. ft. of floor space in a wing of the civil engineering building is utilized for research equipment and a small shop. T. H. Evans is head of the department of civil engineering and C. E. Kindsvater associate professor.*

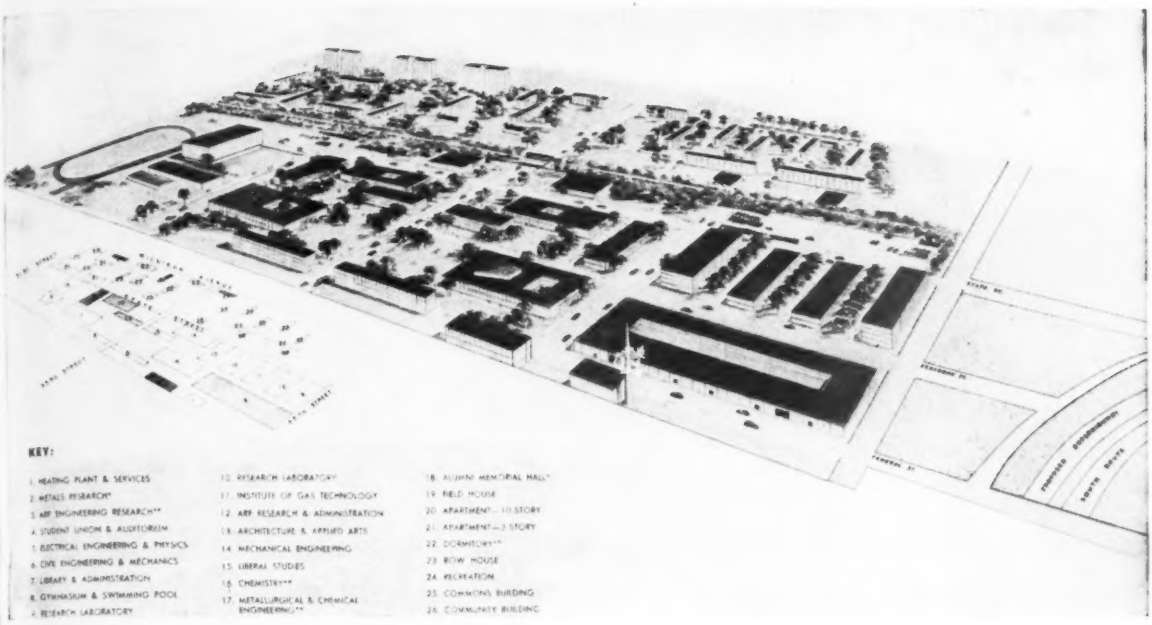
Eldon J. Yoder, formerly of the Purdue University research staff, has been named assistant professor in the Ohio State University civil engineering department, effective Jan. 1. He took his bachelor's and master's degree at Purdue and was appointed to the staff of the joint highway research project at Purdue where he did work on soil-aggregate mixtures and later studied the effect of chemical mixtures on various physical properties of soils.

G. J. Dodd, was promoted to professor of civil engineering at McGill University, Montreal. He is a graduate of McGill and has been on the staff since 1913, with the exception of five years service in the war. He was appointed assistant professor in 1927 and associate professor in 1932.

H. Phillip Pickering has been appointed assistant professor of civil engineering at the college of engineering, University of Maryland. He is a graduate of the University of Colorado, 1932, and attended the Harvard University Engineering Graduate School. He had a wide professional experience prior to entering the Corps of Engineers, U.S. Army, in 1942, in which he held the rank of major. He had charge of camp and airfield installations in the United States and served for two years as assistant chief of air installations throughout Africa and the Middle East. For one year he taught graduate engineer officers at the School of Applied Tactics at Orlando, Fla.

Trustees of Alabama Polytechnic Institute have authorized Ralph Draughon, acting president, to investigate the possibility of a building expansion program to total about $2,000,000. Among projects under discussion are an engineering laboratory building, $986,500; and a classroom and laboratory building, $485,000.

A. W. Melloh has been appointed vice-director of the Engineering Experiment Station at the Agricultural and Mechanical College of Texas. Mr. Melloh received his doctorate from the University of Minnesota, was employed in naval underwater sound research during the war and in naval research at the Stromberg-Carlson Corp. more recently. Projects totaling more than $500,000 will be administered during the coming year.



Illinois Institute of Technology builds vast new campus

What is said to be the world's most modern college campus is growing out of one of the nation's worst blighted areas, under the impetus of a $15,000,000 development and expansion program of Illinois Institute of Technology, Chicago, Ill. The school's Technology Center campus is being transformed into a functionally planned study and residential area for 10,000 persons.

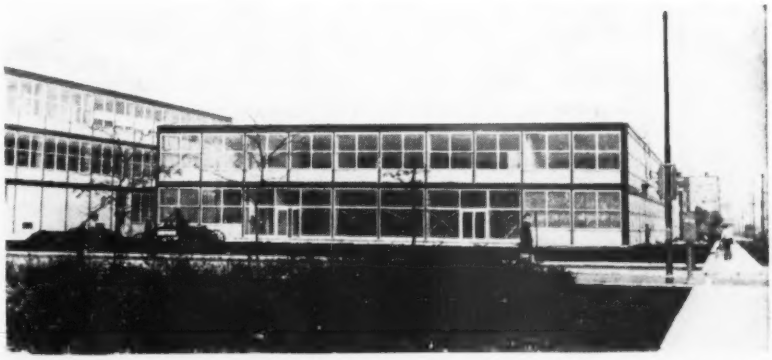
Covering the 100 acres from 31st to 35th Streets, and from Michigan Avenue to the New York Central railroad tracks on the west, the campus area being rebuilt represents one of the rare instances where it has been possible to design a group plan on so large a scale.

When the construction is completed in five years, as expected, more than 10,000 people will live, work or study within this Technology Center area.

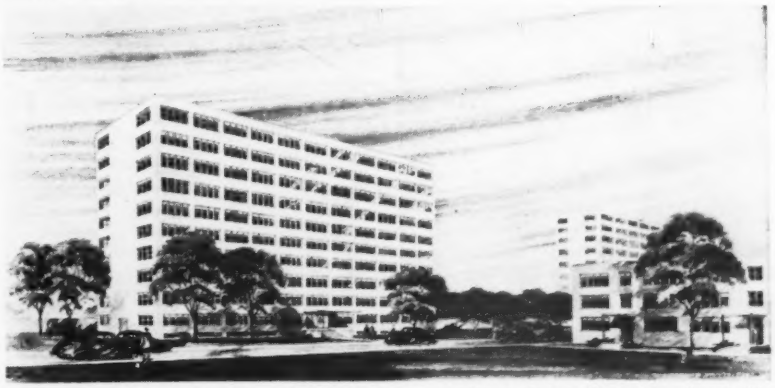
Almost 60 academic, laboratory, and housing structures will be erected, reports President Henry T. Heald.

Architecture for the campus was created by Ludwig Mies van der Rohe, chairman of the department of architecture.

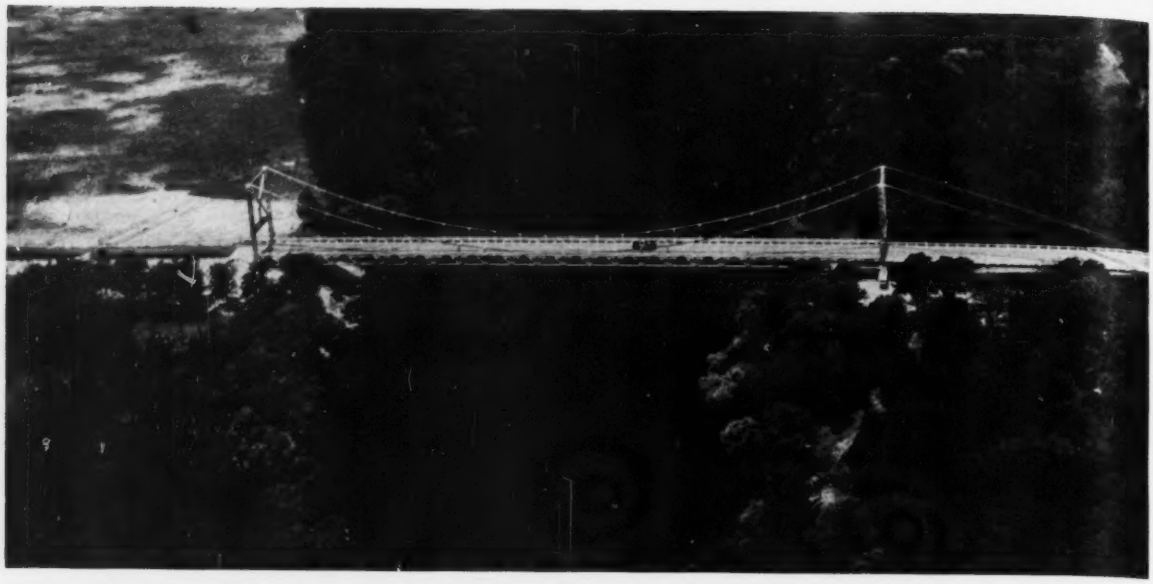
The rebuilding program eventually will lead to the replacement of the 55-year-old academic and laboratory buildings which the college has been using since it was founded in 1892 by Philip D. Armour as Armour Institute of Technology. Illinois Tech is a result of the merger in 1940 of Armour Institute and Lewis Institute, founded in 1896 by Allen C. Lewis.



***The Metallurgical and Chemical Engineering** building is to be completed next month. Three other new academic and laboratory buildings have been erected and are now in full use. The new chemistry building is shown at the extreme left.*



***Permanent housing** for 2,000 students, staff, and families is to be built. Shown here are two of the three 10-story apartment buildings, and one of the three 3-story walk-ups soon to be erected. Two student dormitories are already under construction.*



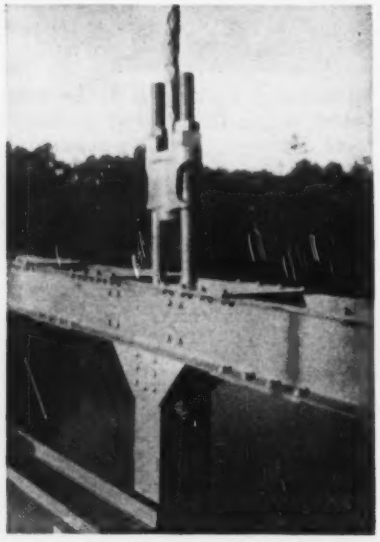
"Way down upon the Suwannee River," Florida recently completed this 420-ft. suspension bridge

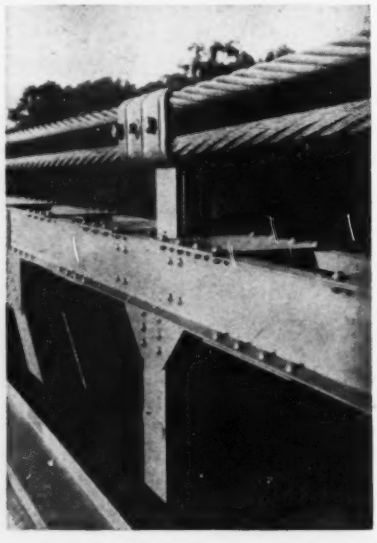
Florida's First Suspension Bridge in Service

The first suspension bridge ever built by the Florida State Roads Department—a graceful, 420-ft. span over the dark waters of the Suwannee River near Mayo, Fla.—has now completed five months of service.

Part of a project for improvement of State Route 69, north of Mayo, the structure is distinguished by the relatively great depth of the stiffening trusses, and the use of a design calling for high rigidity against wind forces. It provides a 26-ft. roadway for vehicular traffic.

At its location a good foundation is available on both banks of the stream, while borings indicated that cavities as deep as 20 ft. would be encountered in building piers in the main channel. Moreover, at the center of the river velocities of 6 ft. per sec. or over occur during high water. Since a suspension bridge would avoid the need for piers in the main channel, and since the cost of this type of crossing compared favorably with other designs, a suspension bridge designed for an H15-S12 loading was decided upon by the engineering staff.





***Suspenders** connecting the stiffening trusses and the cables are of two types shown above. For the longer members, a single 1½-in. diameter cable is used (at left), while each short suspender on the new bridge consists of two 7 x 1-in. steel plates (at right).*

Each of the main cables consists of six parallel wire 2¾-in. dia. ropes without central cores. A 1/10 sag: span ratio is used. The south anchorage for the cables is a cellular reinforced-concrete block filled with earth and measuring 26 x 40 ft. in plan. Built of 450 cu. yd. of concrete, the block is located about 130 ft. from the south tower. It is anchored by 78 steel piles, one-half battered toward the bridge and half in the opposite direction. The piles penetrate a soft rock formation.

The north anchorage is of much the same design but it is located at a much lower elevation and about 230 ft. from the north tower. However, the slope of the main cables between this block and the north tower is the same as at the south end. Height of the towers is 51 ft. 4½ in. above the roadway level and each tower is supported on rockers.

Deep stiffening trusses

For the main span, Warren type stiffening trusses 7 ft. 6 in. deep are used. This depth is rather great when compared with the length of the main span. The panel length of the trusses, which are supported on rollers at each

end, is 17 ft. 6 in. Suspenders connecting the trusses and the main cables are used at every panel point. For the longer suspenders a single 1½-in. dia. cable is used, while the shorter suspenders each consist of two 7 x 1-in. steel plates.

A 33-in. 130-lb. floorbeam is provided at each panel point, and these members support seven lines of 14-in. 34-lb. stringers to which they are welded to provide continuity. Inasmuch as the steel grating roadway is welded to the stringers, a deck of high rigidity results.

To increase further the stability of the structure against wind forces, the 2 ft. of the roadway grating nearest the 18-in. high safety curbs is open grid, as is 4 ft. of the grating along the center line of the roadway. The remainder of the grating is filled with concrete, forming a 9-ft. wide traffic lane of solid floor at each side of the centerline.

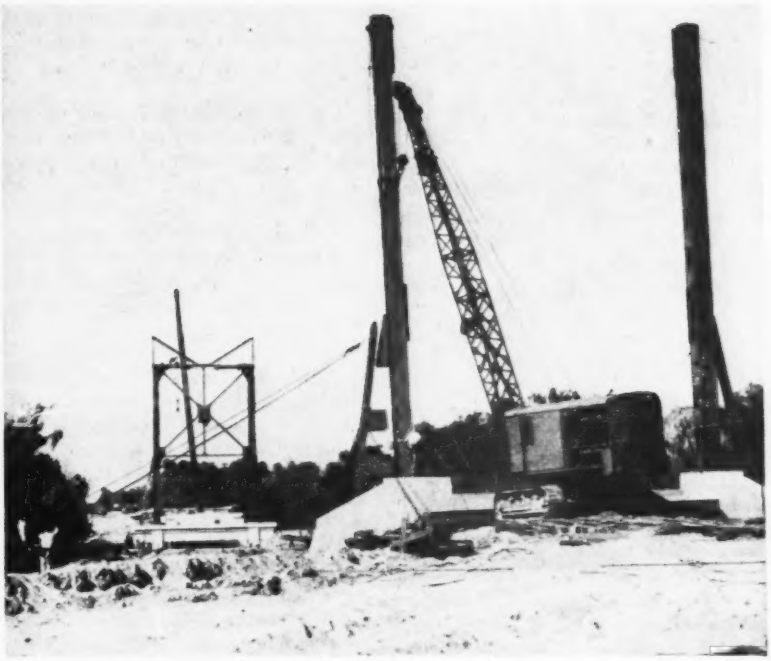
Construction was rapid

The towers were erected by a crawler crane, each tower requiring less than half a day once actual erection started. The 2¾-in. wire ropes for the main cables were delivered to the job full length and the ropes were pulled over the towers by a light line as the cable was fed out from the delivery spools.

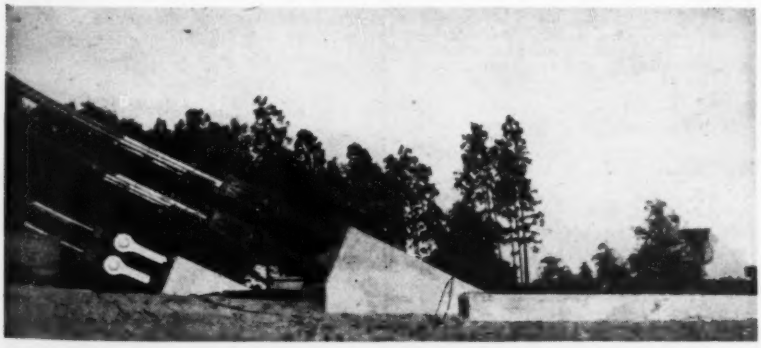
Erection of the stiffening trusses and the roadway system was accomplished primarily by working from the main cables, although this operation included use of a floating rig supported on steel pontoons of the type used so widely by the Navy during the war. A total of only nine days was required to erect both main cables, all the suspenders, the stiffening trusses, and the floorbeams. After seventeen days the floor was in place.

Cost of the new crossing, including both approaches, is about $275,000. L. J. and W. L. Cobb, Inc., Tampa, was the general contractor for the new bridge. Nashville Bridge Co., Nashville, Tenn., fabricated the stiffening trusses and towers. John A. Roebling Son's Co., Trenton, N. J., fabricated the cables and attachments for the main span and erected all the steel for the suspension span. The Tennessee Coal, Iron and Railroad Co., supplied the steel grating for the roadway.

The bridge was designed under the supervision of E. S. Fraser, bridge engineer for the Florida State Road Department. On construction, John R. Slade as division engineer at Lake City was in general charge and Wallace James was project engineer. For the Roebling firm, H. W. Hills was field engineer.



Erection of the towers was readily accomplished with a crawler crane. Both towers are supported on rockers, and side-braced with buttresses. Steel for stiffening trusses was delivered on pontoons, and a section of both trusses, complete with floorbeam, was hoisted into place as a unit.



The south anchorage for the main cables is located at roadway level, and consists of a cellular reinforced concrete block. At the anchor blocks, the fitting at the end of each rope of the main cables was attached to two large-diameter steel bolts, which have been left exposed.

Cascade tunnel project remains a live issue

Terming "ridiculous" an unfavorable report on potential traffic through a proposed Cascade Mountains tunnel on Snoqualmie Pass, (*ENR* June 19 vol. p. 972) Gov. Mon C. Wallgren of Washington has indicated he considers the proposed tunnel far from being a dead issue.

The governor said the report, prepared by the traffic survey firm of Cloverdale & Colpitts, estimated no automobiles would be passing through the tunnel during the seven summer months but instead would take the present route because of its scenic value. During the five winter months, according to the report 216,000 automobiles would use the tunnel, Wallgren said. State Highway Department estimates place the potential traffic at a much higher rate, the governor added.

The 1947 state legislature indefinitely postponed a measure providing for a $17,000,000 bond issue by the State Toll Bridge Authority to finance the 2.03-mi. tunnel. The governor has ben hoping to find means of constructing the tunnel without legislative authorization.

OBITUARY

Conway B. Hunt, retired chief engineer of highways for the District of Columbia, died Dec. 20 in Washington, D. C. An 1882 civil engineering graduate from Rensselaer Polytechnic Institute, he began his engineering career in the metropolitan Washington branch of the Pennsylvania Railroad. He joined the district highway department in 1890 as assistant engineer of bridges, and made a survey of all the bridges in the District of Columbia, and was later promoted to engineer of bridges. In 1897 he was made chief engineer of highways for the district. In 1916 he went to Pitch Lake, Trinidad, to investigate to the quality and supply of asphalt and its adaptability for surfacing highways. The following year he was commissioned a major in the Army Engineers and was on duty with the district highway department until 1922. He retired from the department in 1930 after 40 years service. He supervised the construction of many of Washington's bridges and the union station and its approaches.

Emory Kirwan, construction engineer in Washington, D. C., died Dec. 18 in that city. After attending Baltimore Polytechnic Institute and Lehigh University, Mr. Kirwan designed ships during the first world war and later became a draftsman and then a construction engineer for the Washington Gas Light Co. During the last war he was with the U. S. Maritime Commission and several shipbuilding companies in Texas. In 1945 he began a building construction business of his own.

Louis G. Krause, Sr., former engineer of the Pennsylvania Public Utility Commission, died at Harrisburg, Pa. Dec. 19. He was graduated from Lehigh University in 1901 and he was formerly employed by the Delaware, Lackawanna and Western Railroad. He was named an assistant engineer for the commission in 1916 and later became chief of the railroad section and chief of utilities engineering until he left the commission in 1939.

Charles A. Strong, 64, engineer and contractor of Tacoma, Wash., died there Dec. 13. A 1908 graduate of the Stanford University engineering school, he had worked from Alaska to the Mexican border on construction projects. He was president of Strong & MacDonald, Inc., engineering and construction firm, which he organized with A. S. MacDonald in 1920. Previously, he had been superintendent of the Tacoma Dredging Co. During World War II he supervised the construction of a $10,000,000 Army Camp in Oregon.

Ira Tossey, former Defiance County, Ohio superintendent of the Ohio State Highway Department, died at his home in Van Wert, O., Dec. 13.

Colin J. E. Maxwell, 69, construction superintendent, died at Montreal, Que., Dec. 14. He was the first Mayor of Trancona, Man. when the city was founded in 1911.

Frank E. Brown, 57, of Smith & Brown, structural engineers, Chicago, Ill., died Dec. 14. He had been a structural engineer in Chicago for 30 years, and helped design the Turbine Tower and the Palmer House.

George W. Davis, 50, an erecting engineer for the Allis-Chalmers Mfgr. Co. was killed Dec. 15 at Miamisburg, Ohio when the 20-ft. boom of a crane fell on him while he was supervising the erection of a steam condenser for the Dayton Power & Light Co.

Thomas J. Burke, partner in Frank A. Burke & Son, building contractors, Chicago, died Dec. 11 in that city as the result of an automobile accident.

Nelson O. Parks, 87, veteran of more than half a century in the construction business, died recently in Buffalo, N. Y. He was with the George Parks Sons Co. of Buffalo until he retired some years ago.

Stanley Staten, 70, formerly a civil engineer in Utah, died in Sawtelle, Calif., Dec. 7. He had supervised construction of flotation plants at Midvale and Tooele, Utah, and Mountain City, Nev., and many other projects of the mining and smelting industry. He also had served as civil engineer with the Denver & Rio Grande Western Railroad Co.

William Worth Pearse, 77, former vice-president and chief engineer of Radley Steel Construction Co. of New York City, died at Toronto Ont. Dec. 11.

Arthur Russell Hollett, 43, member of the engineering faculty of the University of North Carolina, died Dec. 13 at the Veterans' hospital at Fayetteville. He was a lieutenant colonel during the war and had been connected with the university at Chapel Hill since his graduation there in 1927.

James W. Dappert, 88, a past president and life member of the Illinois Society of Engineers, died Dec. 10 in Taylorville, Ill. A graduate civil engineer of Valparaiso University, Mr. Dappert went to Topeka, Kan., in 1884 and laid out and helped supervise the erection of the foundation of the state capitol building. He worked as a surveyor in various parts of Kansas and in 1888 went to Pueblo, Colo., where he was assistant city engineer. He was on irrigation and mining surveys until 1892. He served as Taylorville city engineer from 1893 to 1904, and also was county surveyor from 1904 until 1908.

William H. Jackman, 71, a retired Westchester County N. Y., engineer, died at his home at 56 Hawthorne Street in White Plains Dec 18. Mr. Jackman retired a year ago after six years as an engineer with the engineering division of the county's Public Works Department.

Peter G. Gourdin, 70, a civil engineer for 45 years, died at Kingstree, S. C., Dec. 21.

MAJOR MEETINGS

American Society of Civil Engineers, annual meeting, Hotel Commodore, New York, N. Y., Jan. 21-24, 1948.

Canadian Construction Association, 30th annual meeting, Chateau Frontenac, Quebec, Que., Jan. 25-28.

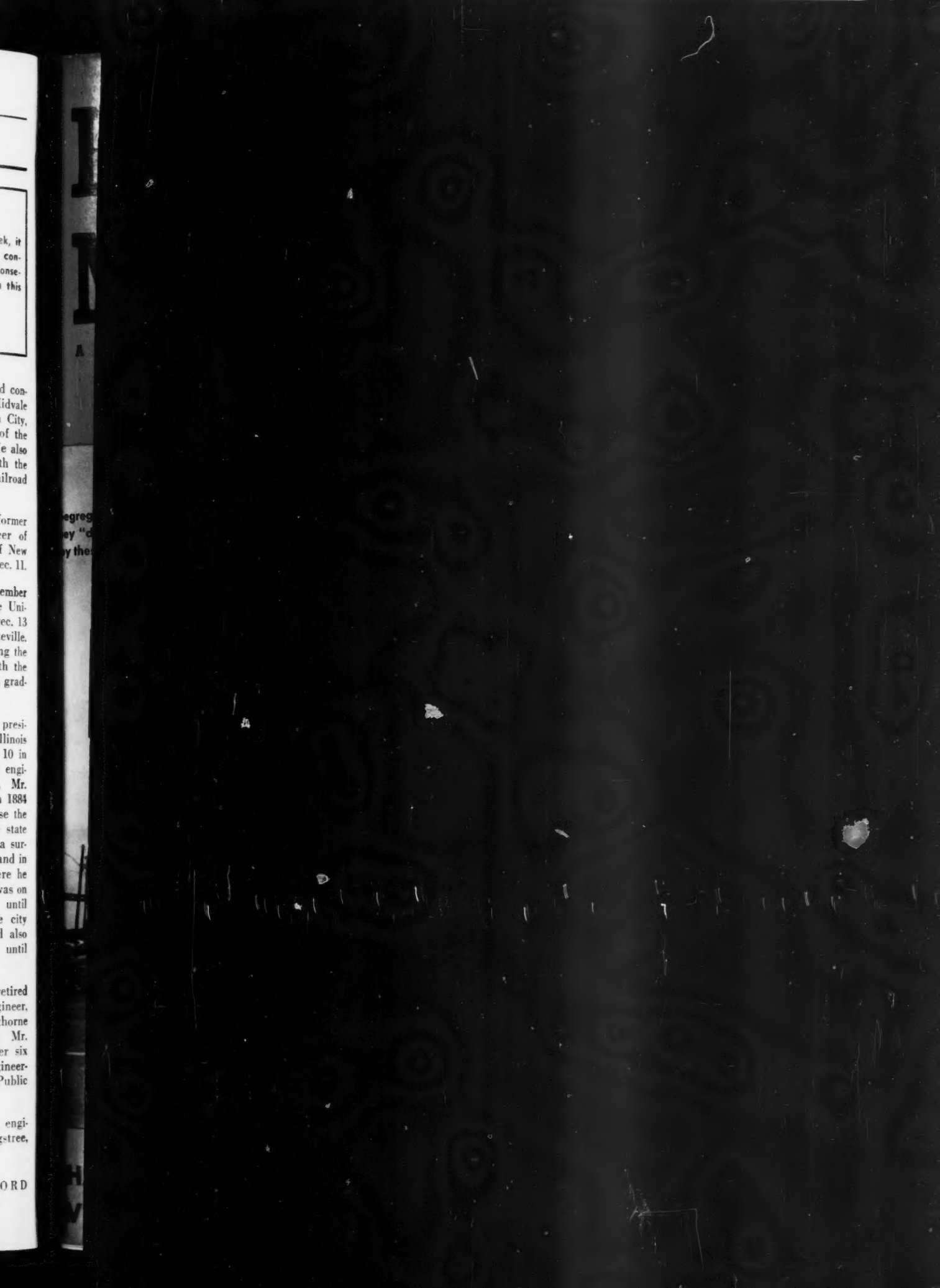
American Road Builders' Association, and its Divisions, annual meeting, Willard, Mayflower and Statler Hotels, Washington, D. C., Jan. 26-28.

Associated General Contractors of America, Inc., 29th annual convention, Dallas, Tex., Feb. 9-12.

Associated Equipment Distributors, 29th annual meeting, Chicago, Ill., Feb. 15-19.

U. S. Conference of Mayors, annual conference, Waldorf-Astoria Hotel, New York, N. Y., Feb. 16-18.

American Concrete Institute, annual convention, Shirley-Savoy Hotel, Denver, Colo., Feb. 23-26.

CONSTRUCTION ACTIVITY

Because of the short business week, it was impossible to obtain complete construction figures for the period. Consequently this feature is omitted from this issue.